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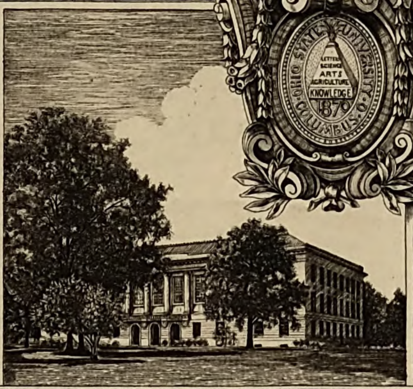

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INDEX OF CONTENTS.

JANUARY TO JUNE, 1928.

(For Special Headings see under Answers to Correspondents; Books; Certificated Plants, etc.; Nursery Notes; Obituary; Plants, New; Societies; and Illustrations.)

A

Abelia triflora, 301
Aberdeen parks, progress at the, 336
Acacia Cunninghamii or A. podalyriaefolia, 94
Accidents in the garden, 284
Acer rubrum, 439
Achillea Lewisii, 465
Acokanthera spectabilis, 135
Ada aurantiaca, 334
Adelaide Botanic Garden, 185
Aethionema pulchellum, 190
Afforestation and small holdings in Scotland, 112
Aftermath of winter, 439
Agricultural scholarships, 291
Agriculture and horticulture, Empire, 273
Agricultural Congress in Bucharest, 426
Aldenham House Gardens, 366
Algae in a Sphagnum bog, 183
Allotment management, 290
Allotments rate-free, 348
Alpine garden, 6, 24, 42. 62, 79, 98, 118, 152, 171, 190, 208, 226, 246, 263, 278, 312, 335. 352, 370, 394, 413, 431, 449, 465
Alpines at Kew, 221
Amaryllideae, bigeneric hybrids among the, 99
American fruit and Rose stocks Conference, 426
American Gooseberry mildew, 365
American Iris Society, 94, 291
America's National flower, 39
Anagallis tenella, 235
Anchusa myosotidiflora, 295
Androsace foliosa, 246; A. pyrenaica, 80; A. sarmentosa, 119; A. sarmentosa Watkinsii, 171
Anemone vernalis, 312
Anguloas, 62, 334
Annuals: sowing, 284; winter-flowering, in America, 136
Anomatheca cruenta, 342

Answers to Correspondents:—

Alum for the destruction of slugs, 128; American Gooseberry mildew, 363; Azaleas, Kurume, 346; Begonia rust, 406; Bignonia, Tropaeolum and Magnolia, 110; Blood manure, composition of. 220; Bones, method of using, 146; Camellia reticulata on chalk, 272; Carnation rust, 128; Chilean plants for the Orkneys, 91; Chrysanthemums for market work, 35; Chrysanthemums, stopping, 288; Coelogyne cristata, 239; Conifers and evergreen shrubs for north border, 53; Conifers diseased, 272; Cordyline after flowering, 128; Cottage, tenancy of, 146; Cucumbers shrivelling, 305; Dianthus of crimson colour, 239; Ericas, propagating, 110; Flannel weed in Lily pond, 255; Flower, definition of a double, 164; Flowers for personal wear, 363; Fruit store, 110; Fruit trees unhealthy, 146; Gardener's agreement, 128; Gardener's notice, 255; Gardener's notice and compensation, 182; Gloxinia leaves diseased, 346; Goldfish diseased, 272; Gooseberry mildew, American, 363; Gummosis, cause and cure of, 128; Iris Wattii, 272; Lawn sand, 182; Loam, wireworms in, 346; Moss on a hard tennis court, 363; Narcissus bulbs attacked by eelworm, 364; Nectarine leaves diseased, 346; Nectarine Spencer, 239; Orange trees, 239; Orchids from seeds, raising, 71; Parsnips, brown colour on, 110; Peach leaves diseased, 364; Peach trees failing, 288; Rabbits, damage by, 363; Rhododendron rust, 364; Rhododendrons and Azaleas, propagation of, 288; Rose rust, 327; Rushes for chair-making, 201; Shrubs for border facing south, 71; Slugs, alum for destruction of, 128; Sulphate of iron and black spot on grass, 472; Tennis court, moss on hard, 363; Thatching a summer house, 364; Tomatos and Pteris roots, 327; Tulip Pride of Haarlem green in colour, 255; Vine border, 220; Vine leaves attacked by red spider and thrips, 364; Vines in greenhouse, 110; Water lost by plants, 201; Water weeds in swimming tank, 472; Weed-killer for new road, 17; Weed on lawn, 110; Weevil, the clay-coloured, 363; Weevils amongst Fern roots, 182; Wireworms, remedies for, 91, 346

American Delphinium Society, 440
Anthurium Scherzerianum, 170
Antirrhinum sempervirens, 449
Antwerp autumn exhibition, 391
Aotus gracillima, 294
Aphelandra squarrosa, 246
Apiary notes, 340, 437
Aponogeton distachyum, 412
Apple breeding in British Columbia, 427
Apple capsids, note on, 399
Apple, Case-bearer, 384
Apple grafting experiments, 385
Apple growing, a new intensive system of commercial, 340, 356, 389
Apple, scab: 285, 360; control of, 426
Apple trees on their own roots, method of producing, 32
Apples, varieties of: Brabant Bellefleur, 15; Bushey Grove, 387; Glory of the West, 470; Lane's Oakland Seedling, 196; Melrose, 470; Orleans Reinette, 385, 421; Upton Pine, 470
Apples: cold storage of, 165; flavour test with American, 21; origin of commercial, 254
Arabis caerulea, 152; A. Taplow Rose, 312
Araucaria failing, 442
Arctostaphylos Uva-ursi, 463
Arenaria montana var. grandiflora, 449; A. norvegica, 246; A. purpurascens, 312
Aristolochia Lindneri, 81
Arnebia echioides, 312
Arnold Arboretum, the, 57
Artichoke, the Chinese, 321
Artindale, Mr. J., 74
Ashridge Park, 444
Asparagus, forcing, 50
Asperula suberosa, 312
Astrantia minor, 247
Atkinson, Mr. W., 2
Auriculas, 385
Awards of Garden Merit, 148
Ayrshire Potato Crops, 445

B

Bacteria, 235; and soil inoculation, 284
Balsams for bedding, 295
Banana cultivation in Jamaica, 434
Barnsley, Locke Park, 425
Barton, Major W., 94
Basil, 321
Bateson, Beatrice (*William Bateson, Naturalist*), 289
Bean, the climbing French, under glass, 161
Beans, Runner, 359
Bearded Irises, 442
Beetles injurious to timber, 366
Begonia Gloire de Lorraine as a cut flower, 284; B. nitida var. Prince Eugen, 370
Begonias: some new Siamese, 66; winter-flowering, 62
Belgian export tax removed, 241
Belgian Sweet Pea Society, 2
Berberis Hookeri, 79
Bews, J.W. (*Studies in the Evolution of the Angiosperms*), 420
Birds: and fruit, 15, 33, 51, 87, 107, 125, 143, 161, 197, 218; the sight of, 2
Black Currant and Raspberry crops, estimates of, 426
Blatter, Ethelbert (*Beautiful Flowers of Kashmir*), 67
Bletia Shepherdii, 62
Blinds for greenhouses, lath, 340
Blue-tits, 107
Bodnant, Taly-cafn, N. Wales, 156
Bog garden, 6, 353, 412

Books, notices of: — A British Garden Flora (*Lt.-Col. J. W. C. Kirk*), 436; A Guide to Kew, 242; Beautiful Flowers of Kashmir (*E. Blatter*), 67; Botanical Magazine, 112, 242; Bush Fruit Cultivation (*R. A. Van Meter*), 437; Dahlia Year Book, 289; Fertilisers and Soil Improvers (*W. Gardner*), 30; Flowering Plants of South Africa, 93, 289; Garden Craft in the Bible, and other Essays (*Eleanour Sinclair Rohde*), 420; Gladiolus Annual, 148; Hardy Evergreens (*Frank A. Shepfer*), 455; Lilies and their Culture in North America (*William N. Craig*), 400; Mycorrhiza (*M. C. Rayner*), 141; Notes from the Edinburgh Botanic Garden, 55; Plant Hunting (*E. H. Wilson*), 158; Primulas for Garden and Greenhouse (*E. H. M. Cox* and *G. C. Taylor*), 120; R.H.S. Gardens Club Journal, 184; Spezial-Adressbuch der Gärtner und Blumenhändler Osterreichs, 30; Studies in the Ecological Evolution of the Angiosperms (*J. W. Bews*), 420; Sweet Pea Annual, 166; The Gardens of Japan (*Jiro Harada*), 356; Unsere Freiland-Stauden (*Edited by Ernst Graf Silva Tarouca and Camillo Schneider*), 30; Wild Flowers of Kashmir (*B. O. Coventry*), 141; William Bateson, Naturalist (*Beatrice Bateson*), 289; Winter Botany (*W. Trelease*), 30

Boronias, 394
Botanical Congress, fifth international, 166
Botanic Gardens, Trinidad. 426
"Botanical Magazine," 112, 242
Box, 448
Bracken, destruction of, 148
"Breaking" in Tulips, 435, 470
British Columbia, Apple breeding in, 427
British Ecological Society, 20
British Florists' Federation, 460
British Guiana, research work in, 366
Brodie Castle, Daffodils at, 348
Browallia speciosa major, 98, 356
Browallias, 170
Brunfelsias, 370
Brussels Sprouts, 142
Brussels Sweet Pea Exhibition, 147
Bucharest, agricultural Congress in, 426
Buddleias, 117
Bulb Garden, 7, 24, 101, 119, 226, 247, 313, 352, 430
Bulgaria, land reclamation in, 408
Burgess, Mr. J. J., presentation to, 95
Burnham Beeches, proposed sports ground at, 166
Bush Fruit Cultivation (*R. A. Van Meter*), 437
Butler, Mr. J., 222

C

Cabbage, the, 125, 180, 235
Cairns, Mr. J., retirement of, 39
Caladiums, 170
Calandrinia grandiflora, 6
Calceolaria John Innes, 6
Calderhead, Mr. David, 20
Camellia japonica, 266
Campanula Aucheri, 431; C. Laurii, 431; C. petraea, 25, 69; C. planiflora, 226; C. pulloides, 226
Canada: British gardeners for, 258; demonstration gardens in, 222; horticultural activity in, 408

326182

Cardamine pratensis, fl. pl., 334
Carnations: border, 218; concerning border, 159; in the United States, 78; new, 289; perpetual-flowering, 262;
Castanopsis chrysophylla, 294
Catasetum Christyanum, 205; C. Garnettianum, 153
Ceanothus rigidus, 384
Celery, protecting, 125
Celmisia spectabilis, 98
Centaureas, 170
Centropogon Lucyanus, 209

Certificated Fruits :—

APPLES: High View Pippin, 52: Saltcote Pippin, 17

Certificated Plants :—

ADIANTUM FLABELLATUM, 376; Aethionema Warley Ruber, 343; Anemones: Everton Strain, 303; A. Pavoniana, 270; Anthurium Rothschildianum Comet, 270; Auricula Bookham Glory, 270; Azalea indica Charme de Noel, 236; A. indica Etoile de Belgique, 236; A. indica Triumph, 236; A. Magog, 376; A. Princess Juliana, 324; Begonia Albatross, 376; B. Florence Bigland, 376; Brasso-Cattleya Ajax var. splendens, 345; B.-C. Bianca var. Ajax, 200; B.-C. Bianca var. Belle, 220; B.-C. Dietrichiana, Llewelyn's var., 108; B.-C. Fama, 238; B.-C. Sindore, 198; B.-C. Success var. George Wall, 200; Brasso-Laelio-Cattleya Jupiter var. splendens, 345; Bulbophyllum Binnendijkii, 374; Calceolaria crenatiflora, 303; C. Darwinii, 376; Callicarpa sp., Farrer 1,446, 16; Camellia rosaeflora var. fl. pl., 126; Carnations: Citron, 376; Evelyn Towneley, 236; Ivory, 270; Margot Holmes, 472; Maud Allwood, 326; Mrs. A. J. Cobb, 343; Sunny, 376; The Lady Seaforth, 303; Cassiope selaginoides, 198; Catasetum Christyanum, 198; Cattleya Octave Doin var. Radiant, 200; C. Remy Chollet var. Bruges, 126; C. Tityus var. Regina, 181; Chimonanthus fragrans var. grandiflorus, 52; Chinodoxa nana, 198; Choananthus sp., 472; Chrysanthemum Crimson Conquest, 52; C. Mawii, 376; Cymbidium Aurigia var. Tertium, 220; C. Caligula, 182; C. Ceres, Wyld Court var., 236; C. Eagle var. Excelsior, 236; C. Erica Sander, Wyld Court var., 126; C. Glasgow var. Othello, 345; C. insigne var. Mrs. Carl Holmes, 198; C. Joy Sander var. Orbis, 374; C. Landrail var. Ophir, 198; C. Letty, Exbury var., 198; C. Lilian Sander var. aurea, 126; C. Pauwelsii var. Croesus, 162; C. Rosanna var. Magnolia, 236; Cypripedium Bedouin var. aureum, 51; C. Chrysostom var. Mary Crawford, 88; C. Helsa var. Astrid, 181; C. Jungfrau, 89; C. Mafalda, 88; C. Margaret Ingham, 182; C. Memoria F. M. Ogilvie var. Mastiff, 181; C. Mrs. James Clark, 238; C. Nessius, 181; C. Sebastian Cabot var. Sir John Franklin, 108; C. Vesper var. Veronica, 220; C. Vesper var. Virginia, 108; C. Waratah, 108; Cytisus Lady Moore, 376; Dendrobium infundibulum var. magnificum, 345; D. Merlin, Towneley Grove var., 345; D. Montrose, 345; D. nobile atrorubens, Adamson's var., 345; D. plumptonense, Towneley Giant, 345; D. plumptonense var. Ian, 238; D. Renown var. Carmen, 305; D. Rubelius, 345; D. Southport Gem, 200; D. sp. 457; D. thyrsiflorum var. Gallicianum, 472; D. Tinsbury Gem var. Curlew, 238; Dicentra chrysantha, 376; Dracocephalum speciosum, 376; Embothrium coccineum, 422; Eremurus Highdown Gold, 458; Escallonia Donard Brilliance, 458; Excoecaria bicolor, 126; Freesias: Albâtre, 198; Delight, 198; Fritillaria latifolia, 236; Gazania Pavonia, 376; Geum Fire Opal, 376; Hieracium villosum, 125; Hippeastrum Baroness Schröder, 303; Hydrangeas: David Ingamells, 376; H. J. Jones, 376; Mrs. A. Simmonds, 343; Mrs. R. F. Felton, 376; Hippeastrum Cerise magnificum, 198; H. equestre (?) var. ignescens, 270; Iris japo-Watt, 236; I. sibirica Ceasor, 423; I. sibirica Otawa, 423; Laelio-Cattleya Aphrodite var. Arandora, 471; L.-C. Clarilaw, 374; L.-C. Gwend len Leach, 162; L.-C. Invicta 374; L-C. Miss Faith Hanbury, 472; L.-C. Mrs. Chamberlain Chandler, 374; L.-C. Schroderae var. Perfect Gem, 108; L.-C. Zeno, Llewelyn's var., 220; Leptospermum scoparium var. roseum, 126; L. scoparium var. roseum multipetalum, 126; Lonicera pyrenaica, 376; Lycaste Skinneri var. Towneley, 108; L. Skinneri var. Walden, 108; Miltonia Bleuana grandiflora, The Warren var., 345; M. Bleuana La Perle var. Magna, 220; M. Bleuana rosea var. delicata, 345; M. Carmine, 345; M. Constance var. Argenta, 471; M. Freza var. Concorelia, 371; M. gattonensis, Exbury var., 421; M. g., Stonehurst var. 457; M. Hyeana var. Bain, 345; M. Hyeana var. King Ethelred, 471; M. Jules Hye de Crom var. Dracula, 345; M. Hyeana var. Peggy, 108; M. Lena, 471; M. Leonard Hatcher, 471; M. Lucia, Paterson's variety, 342: M. Lyeana var. gigantea, 457; M. Lyoth, The Warren var., 345; M. Mona, 374; M. Nellie Smith var. Nuthatch, 345; M. Princess Mary var. radiata, 471; M. Ruby 345; M. Sanderiana var. June, 457; M. vexillaria var. Duke of York, 471; M. Vinehouse var. rosea, 471; M. William Pit var. Emperor, 471; Narcissus Beauty of Cambridge, 270; N. Bradwardine 270; N. Brimstone, 323; N. Carmel, 323; N. Clywd, 270; N. Comrade, 286; N. Copper Bowl, 287, 323; N. Crucible, 323; N. Glorious, 366; N. Golden Goblet, 271; N. Goviley, 237; N. Hades, 286; N. Holmdale 271; N. Icilinda, 271; N. J. K. Ramsbottom, 271; N. Lord Antrim, 323; N. Mystic, 286; N. Narrabri, 286; N. Nissa, 287; N. Quartz, 287; N. Red Rim, 287; N. Red Sea, 286; N. Seashell, 323; N. Silver Plane, 286; N. Suda, 323; N. Trewirgie, 237; N. Tunis, 366; N. Warspite, 323; N. Wide Wing, 271; N. Zionist, 199; Nymphaea pygmaea rubra, 376; Odontioda Brockenhurst, Stonehurst var., 343; O. Grenadier, The Node var., 236; O. Majestica var. Brilliant, 374; O. Maureen, Bolholt var., 471; O. Maureen var. Cardinal, 471; O. Maureen var. grandiflora, 345; O. Maureen var. Mavourneen, 421; O. Mrs. R. F. Felton, 374; O. Murillo var. The Duchess, 374, 401; O. Picardie, 374, 408; O. Rubicon, 269; O. Sensation var. Marion, 345; O. southportense, 471; O. Van Eyck, 269; Odontoglossum amabile var. Eclipse, 108; O. armainvillierense xanthotes var. Perfecta, 126; O. Breworthii var. Ethel Thorpe, 471; O. Camilla var. Empress, 401; O. Carola var. Tortica, 220; O. crispum var. Carl Holmes, 269; O. c. var. Diamond, 345; O. c. var. Harvest Moon, 374, 421; O. c. var. Pearl McBean, 374; O. c. var. The Tetrarch, 374; O. Doreen, Llewelyn's var., 200; O. eximium var. Butterfly, 108; O. eximium regalis, 471; O. Fabia var. Emperor, 345; O. Golden Glory, 421; O. Gorizia var. Congyngham, 182; O. Llewelyn var. Black Prince, 181; O. Mona var. Regina, 374; O. Phena var. Majestic, 345; O. plumptonense var. albo-violaceum, 345; O. Promerens, Beardwood var., 182; O. Rosina var. Vesteyanum, 471; O. Sheila Stephenson, var. Atholl House, 88; O. Thetis, 126; O. Toreador var. Ursula, 51; Odontonia Aglaon, 16; O. Amoena, 51; Ourisia coccinea Pers., 343; Paeonia sp., 458; Papaver nudicaule, Barton Mills Strain, 422; P. orientale var. Pride, 422; P. o. Fortunei, 458; Pentstemon glaber, 458; Pernettya mucronata Bell's Seedling, 236; Platytheca galioides, 458; Primula cernua, 303; P. heucherifolia, 377; P. malacoides var. Rosalind 163; P. Menziesiana, 303; P. rosea var. Brockhurst, 270; P. sinensis Sutton's Purity, 52; P. stellata Hillside Blue, 127; Prunus incisa × speciosa, 270; Pyrus Lemoinei, 343; P. Malus Russell's Weeper, 270; P. Malus var. theifera, 343; Ranunculus cortusaefolius, 343; R. libanotes, 422; Rhododendron Anne, 303; R. arboreum var. nigrescens, 163; R. keleticum, 324; R. Kernick Gem, 163; R. K. W. 6,301, 303; R. Linley Sambourne, 324; R. Mars, 324; R. Rhodora, 89; R. Rosemary Chipp, 343; R. Sheila Osborn, 458; Roses: Chaplin's Pink Climber, 301; May Wettern, 301; Saxifraga Burseriana var. Brookside, 127; S. Delia, 163; S. Mrs. G. Prichard, 236; Sophro-Cattleya Clarinda var. Gloriosa, 126; Sophro-Laelio-Cattleya Vulcan var. Brilliant, 181; Strobilanthes isophyllus, 89; Syringa Massena, 376; S. sp., 376; S. yunnanensis, 422; Tulip Dipper, 344; Ursinia anelhoides, 472; Vanda Bensoniae, 345; Venidium fastuosum, 423; Vuylstekeara ignescens, 181

Certificated Vegetables—

BEETS: DAINTY, 90; Long Dark Red, 90; Onions, Ailsa Craig, 90; Ailsa Craig Selected, 90; Autumn Triumph, 90; Exhibition, 90; Lemon Rocca, 90; Long Keeper, 90; Nuneham Park, 90; White Spanish Selected, 90; Yellow Flat Dutch, 90

Characters and testimonials, 250, 320
Cherries: importation of, 365; Japanese flowering, 390
Chicory, the uses of, 50
Chili and the Andes, 12, 46
Chimonanthus fragrans var. grandiflorus, 69, 125
Chirita involucellata, 140; C. involucrata, 140; C. lavandulacea, 43
Choisya ternata, 78
Chrysanthemum arcticum, 278
Chrysanthemum leaf-miner, 442
Chrysanthemum midge, 241
Chrysanthemums: early-flowering, 210, 247, ; trial of, 134; early-flowering at Reaseheath, 409; new, 8
Cider testing day at Long Ashton, 386
Cistus Loreti, 294
Claytonia sibirica, 439
Clematis montana, 61
Clematises, large-flowered, 266
Click beetles and wireworms, 217
Cock, M. Lucien de, 274
Codonopsis ovata, 6
Colchicum croaticum, 170; C. luteum, 140
Cologne, open spaces for, 166
Commelina coelestis, 80, 235
Commemoration Cup at Chelsea Show, 166
Compton Acres, 462
Conference, American Fruit and Rose Stocks, 426
Congress, French Horticultural, 426
Conifers: blue, 279; notes on, 231
Convolvulus Cneorum, 314
Copley, Mr. George H., 389
Coriaria japonica, 448
Cornus florida, 173
Corsica, plant industries of, 296
Cortusa Matthioli, 449
Corypha Utan, 27
Cotoneaster frigida var. montana, 162; C. Simonsii, 8
Cotyledon japonica, 116; C. simplicifolia, 62
Coventry, B. O. (*Wild Flowers of Kashmir*), 141
Cox, E. M. H. (*Primulas for Garden and Greenhouse*), 120
Craig, W. N. (*Lilies and their Culture in North America*), 400
Crocus Sieberi, 119
Crocus Sunday at Kew, 165
Crop Production in 1927, changes in, 408
Cross Park, Glasgow, 274
Cucumbers diseased, 442
Cultural Memoranda, 62, 218, 253, 285, 319, 385
Cupressus Lawsoniana erecta viridis, 412; C. sempervirens var. pyramidalis, 227
Currants: Black, certification of, 367; ornamental, 78, 143; Red, 106
Curtis, Mr. C. H., Belgian honour for, 37
Cynoglossum grande, 295
Cypress, the Chinese Swamp, 9
Cypripedium seedlings, 98
Cytisus Ardoini, 371; C. sulphureus 412

D

DAFFODILS AT BRODIE CASTLE, 348; exhibited at the Tamar Valley Show, 269
Dagenham, open spaces for, 290
Daphne caucasica, 227; D. Cneorum, 191; D. odora, 191
Darmstadt, hail damage in, 391
Dawber, Mr. Guy, honour for, 112
Dendrobium infundibulum, 263
Dendrobiums, 232
"De Veldbode," twenty-fifth year of, 38
Devil's Dyke, Brighton, 94, 131
Dianthus calalpinus, 171; D. Ipswich Crimson, 190
Disporum oreganum, 80
Dominion and Colonial Correspondence, 160, 219
Dornburg Gardens, reconstruction of, 56

Doronicum caucasicum, 430
Douglas, David, memorial to, 37
Douglas Fir, a disease of, and other Conifers, 105
Drimys Winteri, 173
Drymoglossum carnosum var. minor, 116
Dublin, new sports grounds at, 308
Dumfries, The Rock Garden, Crichton Royal, 433
Dunkery Beacon, 308
Dutch Elm disease, 31, 273
Dutch Sweet Pea Exhibition in July, 427

E

EASTER HOLIDAYS, THE, 257
Eaton Park, Norwich, 408
Eccremocarpus scaber, 153
Edinburgh Garden Guild "Journal," 290
Edinburgh, notes from, 136, 264, 373
Elm disease in England, occurrence of the Dutch, 31, 273
Elm trees, treacherous, 348
Empire agriculture and horticulture, 273
Entomology, congress of, 204
Epacris, 135
Erica australis, 191
Erinus alpinus, 394
Erodium carvifolium, 226; E. corsicum, 6; E. pelargoniflorum, 80
Erodiums, 34
Eryngium prostratum, 208
Erythroniums, 313
Escallonia Edinburgh, 235, 283, 300
Eucalypti in north-west Scotland, 165
Euonymus radicans kewensis, 463
Euphorbia jacquinaeflora, 197
Eustoma Russellianum, 334

F

FABIANA IMBRICATA, 395
Farm wages, 275
Farnham Park, 183
Fences and fencing, the law relating to, 316
Fendlera rupicola, 395
Fernery, the hardy, 385
Ferns, Tree, and Palms, 385
Fertilisers: for fruit trees, 257; new, 234, 438
Ficus Parcelli, 463
Fires, liability for damage by, 219
Flax cultivation in Yorkshire, revival of, 56
Floods and the law, 139
Floralies Gantoises, 75, 112, 183, 204, 349
Florists' flowers, 8
Flower and fruit sterility, 176
Flower beds, planting a large group of, 188
Flower garden, 5, 23, 41, 59, 77, 97, 115, 133, 151, 169, 187, 207, 225, 245, 261, 277, 293, 311, 333, 351, 369, 393, 411, 429, 447, 464
Flower industry in Fenland, the, 274
"Flowering Plants of South Africa," 93, 289
Flowers: at Hampton Court, 425; by air from Italy, 94; method of drying, 75
Foreign correspondence, 286, 439
Forest accidents, 221
Forestry, 232
Forget-me-not, the Norwegian, 360
Formal Garden Exhibit at Pretoria, 34
Foxgloves, hybrid, 389
Foundling Hospital site, 242
Fraser, Mr. George, 348
Fremontia mexicana, 335
French Horticultural Congress, 426
Frost Damage in Germany, 444
Frosts in Ireland, effects of sudden severe, 250
Fruit competitions for amateurs, 407
Fruit garden, the hardy, 5, 23, 40, 59, 76, 96, 115, 132, 150, 169, 186, 206, 225, 244, 260, 276, 292, 310, 332, 350, 368, 392, 410, 428, 446, 464.
Fruit garden, the market, 32, 124, 216, 285, 358, 437
Fruit growing, scientific, 365
Fruit register, 15, 69, 196, 387, 455, 470
Fruit tree parts, the names of, 196
Fruit trees: canker in, 300, 385; fertilisers for, 257; on their own roots, 32; pruning, 217; pruning stunted, 197, 234; pruning versus training of, 68; red spider on, 285; the effect of soil on spur pruning of, 142; two lesser known pests of, 416
Fruits: choice, by post, 444; cold storage of, 290; thinning, 425; under glass, 4, 22, 40, 58, 76, 96, 114, 132, 150, 168, 186, 206, 224, 244, 260, 276, 292, 310, 332, 350, 369, 393, 410, 428, 446, 464
Fuchsia reflexa, 25
Fuchsias, 188
Fumitories, 118

G

GALANTHUS BYZANTINUS, 101, 170
Games in the London Parks, 331
"Gardeners' Chronicle" Gold Medal at Ghent, 348
"Gardeners' Chronicle" seventy-five years ago, 3, 21, 39, 57, 75, 95, 113, 131, 149, 167, 185, 205, 223, 243, 259, 275, 291, 309, 331, 349, 367, 391, 409, 427, 445, 462
Gardeners as male servants, 470
Gardeners' Club, 408
Gardeners, legacies to, 39, 94, 112, 130, 204, 242, 349, 389, 425, 461
Gardener's library, a, 241
Gardeners' Royal Benevolent Institution, 93, 111, 152
Gardeners, Royal Park, sick pay privileges for, 462
Gardenia buds dropping, 442
Gardenia Stanleyana, 262
Gardening in Port Elizabeth, South Africa, 160
Garden notes from south-west Scotland, 83, 153, 211, 295, 372, 468
Gardens championship, all-London, 330
Gardner, W. (*Fertiliser and Soil Improvers*), 30
Gatley, playing fields for, 94
Gatton Park Orchids at New York, 348
Gazania rigens, 42
Gentiana Lagodechiana, 208
Geranium atlanticum, 334; G. napuligerum, 465; G. platypetalum, 153
German Rose Show, 38
Germany, frost damage in, 444
Ghent Floralies, 75, 112, 183, 204, 349
Ginkgo biloba, foliar anomalies of, 28
Gladioli, 129, 147, 197, 204; large-flowered, 284
Gladiolus "Annual," 1928, 148
Glasgow Flower Show, 426, 460
Glasnevin, notes from, 153, 398
Glass flowers in Paris, 56
Glasshouses: for Aberdeen, 290; oil fuel for, 111
Goaring, Mr. W., retirement of, 274
Golf greens, sulphate of ammonia for, 407
Gooseberry mildew, American, 365
Gooseberry sawfly, 321
Gooseberries, late, 268
Grass for games, 161, 197
Greenhouses on private estates, the rating of, 300
Guinea pigs and Apples, 21
Gypsophila fratensis, 69

H

HAEMANTHUSES, 448
Hall, Mr. Cecil, 426
Hampton Court at Easter, 258; flowers at, 425
Harada, Jiro (*The Gardens of Japan*) 356
Hardy Evergreens (*Frank A. Shepfer*), 455
Hardy flower border, 25, 80, 98, 118, 153, 170, 190, 209, 228, 246, 282, 295, 314, 353, 371, 395, 412, 430
Harding prize for a French Rose, 275
Harrison, Mr. A. T., 130
Harrogate Show, Princess Mary to visit, 407;
Hedysarum multijugum, 155
Helianthemums, 262
Helichrysum frigidum, 118
Heliotropes, standard, 353
Helleborus niger altifolius, 98
Heloniopsis breviscarpa, 171
Herbarium and timber specimens, 390
Hesperis matronalis, 314
Hibiscus syriacus, 26
Hill, Dr. A. W., honour for, 147
Hippeastrums, 7, 262
Holland House Gardens, 444
Holly, disappearance of the common, in Germany, 3
Hollyhock, the, 396
Horticultural activity in Canada, 408
Hottonia palustris, 412
Humea elegans, 134
Humulus, inter-specific grafting in, 396
Hutchinsia alpina, 24
Hyacinthus amethystinus, 170

I

ICE PLANT, THE EDIBLE, 269
Ice Saints, the, 291
Ideal Gardens and Plant Lore, 65 82, 174, 212, 336, 452, 467
Ilex latifolia, 191
Impatiens, 135
Imperial Forestry Institute, the, 130
Imperial Fruit Show, 38
Imperial War Graves, 242
Indian Horse Chestnut at Kew, 426
Indoor plants, 7, 43, 78, 98, 116, 134, 170, 190, 209, 246, 262, 294, 314, 356, 370, 394, 412, 440, 463
Industrial designs, competition of, 258
Insectivorous plants, 442
International Exhibition of Garden Design, 19
International Horticultural Exhibition at Le Mans, 148
Inventions, new horticultural, 255, 364
Ionopsidium acaule, 226
Ipomea purga, 314
Ireland, effects of sudden severe frost in, 250
Iris garden, 24
Iris gracilipes, 246
Iris Society, the American, 94, 291
Irises in winter, bearded, 24
Irish Horticultural "Journal" an, 45, 113
Iron as a tonic for plants, 87, 125, 143
Ixiolirion Pallasii, 101

J

JACOBINIA PAUCIFLORA, 314
Jamaica, Banana cultivation in, 434
Jankaea (Ramondia) Heldreichii, 42
Jardin Exotique, Monaco, 192
Jasminum Sambac, 78
Jeans, Mr. H. J., honour for, 407
Jolis, Mr. H., 290
"Journal" of the Manchester Parks Department, 390

K

KEN WOOD PICTURES AT THE ROYAL ACADEMY, 113
Kerchove de Denterghem, M. le Comte Andre de, 148
Kew Gardens: a guide to, 242; alpines at, 221; appointments from, 183, 274; Crocus Sunday at, 165; damage by snow at, 2; damage to trees at, 130; Indian Horse Chestnut at, 426; indoor plants at, 38; Muscari conicum at, 352; notes from, 45, 453; objects of special interest at, 425; Orchids at, 203; Rhododendron Dell at, 407; the floods at, 20; visitors to, in 1927, 166
Kewites in America, 258
King's Birthday Honours, 407
Kirk, Lt.-Col. J. W. C. (*A British Garden Flora*), 436
Kirstenbosch, 259
Kitchen Garden, 4, 22, 40, 58, 76, 96, 114, 132, 150, 168, 186, 206, 224, 244, 260, 276, 292, 310, 332, 350, 368, 392, 410, 428, 446, 464
Krelage building at Haarlem, the, 257

L

LAELIO-CATTLEYA ANNE DOUGLAS HOME, 334
Laelias, Mexican, 135
La Mortola, 73; plants in flower at, in January, 104
Land development in America, 274
Lander, Mr. H., 112
Land reclamation in Bulgaria, 408
Lapagerias, 190
Lawns, fertilisers for, 444

Law Notes:—Merchandise Marks Act prosecution, 319
Leeks, 50
Le Jardin de Jussieu, 154
Legacies to gardeners, 39, 94, 112 130, 204, 242, 349, 389, 425, 444, 462
Leonotis Leonurus, 294
Leptospermum scoparium Nicholii 26
Lettuce, 33
Leycesteria formosa, 371
Library, a gardener's, 241
Liability of property owners, 452
Lilies: in 1927, 10; in the United States, hardy, 60
Lilium nomenclature, 320,
Lilium centifolium, 101; L tigrinum, the sterility of, 280
Lime, on the use of, 432
Lime or chalk, 180, 218, 234, 254, 267, 284
Lime requirement, 443
Lincoln's Inn Garden, 289
Lindley Library, additions to the, 455
Linnean Gold Medal award, 366
Linnean Society, New Foreign Members of the, 408
Linum monogynum, 394
Lippia nodiflora, 413
Lobelia cardinalis, 210; L. tenuior, 356
Lobelias: bedding, 319; perennial, 282
Locke Park, Barnsley, 425
London Gardens exhibition, 309
Long Ashton Research Station, cider-testing day at, 386
Lonicera fragrantissima, 101; L. Ledebourii, 448
Lupinus lepidus, 62
Lycastes, 334
Lychnis chalcedonica, 334

M

MAGNOLIA PARVIFLORA, 294
Maize, 107, 142
Malayan Peninsula, terrestrial Orchids of the, 416
Manures: for February, 86; for March, 160; for April, 253; for May, 319; for June, 399
Marantas and Calatheas, 246
Market gardener's bequests, 21
Masdevallias, 98
Maund, Mr. B., memorial to, 290
Meconopsis: a hybrid, 353; M. Baileyi, mildew on, 408; M. superba, 229
Melon leaves disfigured, 442
Mervyn, The Rt. Hon. Edward, honour for, 407
Mesembryanthemum, 13, 49, 123, 194, 215, 251, 266, 338, 365, 419
Mesembryanthemum or Mesembrianthemum, 391
Meter, R. A. Van (*Bush Fruit Cultivation*), 437
Metropolitan Public Gardens Association, 204
Millipedes, experiment with, 268
Mitraria coccinea, 137
Moerheim, anniversary of the Dutch nursery firm of, 275
Mole in the United States, the, 38
Monaco's Jardin Exotique, 192
Mond, Sir Alfred, honour for, 407
Monro, Mr. George, 258
Moray Field Club, 95, 445
Moray, the flora of, 330
Morisia hypogaea, 263
Morning Glory, the, 37
Muehlenbeckia complexa, 335
Mulberries, 219
Muscari conicum at Kew, 352
Mushrooms, 219
Mycorrhiza, the rôle of, in plant growth, 174, 193, 214, 230
Myosotis alpestris, 226, 342

N

NARCISSUS ANGEL'S TEARS, 360; N. Paper White, in America, 241; N. serotinus, 24
National Arboretum, American, 184
Narcissus flies, some personal observations on small, 301
National Rose Society, 221; new Rose trial ground of the, 348
National Sweet Pea Society's Outing, 426
Nelson, Dr. Alex., appointment of, 222
Nepeta Mussini in Sweden, 21
Nepenthes, 134
Nertera depressa, 335
New Forest, the, 74
New hall, the, of the Royal Horticultural Society, 466; opening of, 203, 461
New Moon sowings, 385
Nidularium Meyendorffi, 356
Nierembergia rivularis, 394
Node Gardens, Welwyn, 427
Nomblot, M. Alfred, honour for, 348
Northern Gardeners, weekly notes for, 5, 23, 41, 59, 77, 97, 115, 133, 151, 169, 187, 207, 225, 245, 261, 277, 293, 311, 333, 351, 369, 393, 411, 429, 447, 464
Nursery Notes:—RUSSELL, LTD., Messrs. L. R., 254; Sanders, Messrs. Bruges, 216
Nut-growing, 179
Nycterinia selaginoides, 334
Nymans, effects of the recent gale at, 20
Nymphaeas, 370

O

Obituary:—Barratt, George, 17; Basham, John, 164; Beckett, A., 128; Beissner, Ludwig, 110; Camp, William, 128; Charlton, Arthur, 442; Cull, W. A., 71; Cypher, John, 71; Deegen, Franz, 239; Flemwell, George, 201; Forbes, Alex., 363; Gaut, Alfred, 182; Grant, John, 272; Heede, Adolphe van der, 164; Herzog, Kark, 201; Holmes, W. A., 110; Huhle, Julius, 239; Knight, George A., 239; Lucas, C. J., 305; Mason, H. T., 305; McDonald, William, 91; Merchant, Wm., 255; Milne, G. P., 182; Morris, Harold, 239; Muirhead, George, 327; Nicholson, W., 53; Paul, Arthur W., 128; Proctor, John, 288; Reader, Frank, 305; Reinhardt, Carl, 201; Roberts, Mrs. J., 35; Robinson, Francis, 345; Shoolbred, Dr. A., 91; Siehe, Walter, 272; Smith, William, 17; Snell, W., 110; Tait, W. C., 327; Tayler, Will, 35; Teisseire, Francois, 182; Thorne, F. J., 110; Tucker, W. Duncan, 460; Waterman, William, 363; Weathers, John, 201
Oenothera Drummondii, 42; O. teraxacifolia, 413
Oenotheras, 90
Oil fuel for glasshouses, 111
Old Palace Garden, Darmstadt, 166
Olympia, the gardens at, 177, 197
Oncidium Sanderae, 7
Open spaces, grants for, 130
Orchid houses, 4, 22, 40, 58, 76, 96, 114, 132, 150, 168, 186, 206, 224, 244, 260, 276, 292, 310, 332, 350, 368, 392, 410, 428, 446, 464
Orchid notes and gleanings, 7, 62, 98, 135, 153, 170, 232, 263
Orchids, 203; at Kew, 203; terrestrial, of the Malayan Peninsular, 416
Orchis longibracteata, 170
Origanum hybridum, 335
Osmanthus Delavayi, 355, 439, 470
Osmanthuses at Wisley, 384
Ourisia caespitosa, 42
Oxalis enneaphylla, 246

P

PACHYSANDRA TERMINALIS, 286
Paeonia Witmanniana, 395
Paeonies, silver cup for, 408
Palms, branching in, 75
Pancratium illyricum, 24
Pandanus Veitchi, 294
Papaver pilosum, 228
Paper, a new gardening, 184
Park superintendent, the qualifications of an ideal, 85, 105, 122, 162, 197
Parks and gardens, public, 50 142, 181, 269, 439
Parochetus communis, 278
Parrya Menziesii, 431
Pavilion Gardens, Brighton, 2
Peach leaves falling, 442
Pears, varieties of: Beurré Benoit, 69; President Barabe, 15
Pears, some early, 15
Peas, 196
Pekin, vine culture in, 439
Pelargonium Endlicherianum, 431
Pelargoniums, rooting Zonal, 78
Pentstemon campanulatus, 6; P. Menziesii var. Scouleri, 430
Pentstemons, 171
Perennials from seeds, herbaceous, 118
Perpetual-flowering Carnations,out-of-doors, 430
Pest destruction in Germany, 147
Pests of fruit trees, two lesser known, 416
Phlox divaricata var. Laphami, 263
Physostegias, 25
Phytolacca decandra, 412
Pinus contorta, or P. Murrayana, 232; P. Thunbergii, 231
Pittosporum undulatum, 51
Plane trees for Paris, 38
Plant diseases in Scottish gardens, 74, 143
Plant growth, effect of light on, 94
Plant industries of Corsica, 296
Plants, insectivorous, 442
Plants New or Noteworthy:—Aristolochia Lindneri, 81; Begonias, some new Siamese, 66; Chirita involucellata, 140; C. involucrata, 140; Colchicum luteum, 140; Cotoneaster Crispii, 44; C. Watereri, 44; Meconopsis, a new hybrid, 353; M. superba, 229; Rhododendron imberbe, 212; Sonerila deflexa, 140; S. fusca, 140
Plant novelties, registered, 142, 400
Plant raising centre for Manchester Parks, 390
Plant tonics, 143
Plants and seeds, importation of, into Canada, 366
Plants: for cold soils, 8; for pools, 6; in flower at La Mortola in January, 104; of botanical interest, 321; poisonous, 338; raising, from collected or rare seeds, 248; South American, 46; the acclimatisation of, 15; the origin of cultivated, 347
Plants under glass, 4, 22, 40, 58, 76, 96, 114, 132, 150, 168, 186, 206, 224, 244, 260, 276, 292, 310, 332, 350, 368, 392, 410, 428, 446, 464
Platytheca galioides, 412
Playing fields for Kent, 222
Plymouth Week, 1928, 308
Podophyllum Emodi, 430
Poisonous plants, 338
Polyanthus, the old blue, 360
Polygala calcarea, 413; P. Vayredae, 352, 439
Polygonum affine, 394; P. vaccinifolium, 431
Post mark advertising by fruit growers, 148
Potato, a new Dutch, 75
Potato: crop of 1927, the English and Welsh, 37; disease in Germany, 205; experiments, 283; pits, rot in Scotch, 167; synonyms, 129;
Potato sales, Ayrshire, 445
Potato trials in 1927, Lord Derby Gold Medal, 19
Potato tubers, intervarietal difference of a chemical nature in mature, 74
Potatos and superphosphate, 69; immune from wart disease, new, 167
Potentilla Tonguei, 62, 449
Potentillas, shrubby, 79
Pralinage, 143
Pretoria, a formal garden exhibit at, 34
Primroses: and lime, 248, 320; day-blooming Evening, 190
Primula acaulis var. E. C. Buxton's Double-Blue, 352; P. Auricula Bauhini, 152; P. Juliae and its hybrids, 152; P. rosea, 6
Primula Conference at Chelsea, 330, 400, 405
Primula, the genus, 120, 176, 195, 208, 235, 252, 267, 282, 318, 338, 354, 419, 436, 454
Primulas as lime lovers, 312; Burmese, in 1926, 84, 122; woodland, 278
Propagation, experiments in, 203
Prostanthera lasianthos, 463
Prunus cerasifera Blireiana, 315; P. ilicifolia, 191
Psychotria jasminiflora, 314
Publications received, 3, 21, 57, 75, 95, 113, 131, 149, 167, 205, 223, 243, 275, 309, 331, 349, 367, 391, 427, 445, 463
Purpus, Herrn, J. A., retirement of, 275
Puschkinia scilloides, 313
Puschkinias, 7
Phygelius capensis, 98
Pyrethrums, 353
Pyrus arranensis, 155; P. baccata, 78; P. Lemoinei, 349; P. Malus Russell's Weeper, award to, 283, 321, 360, 400, 421
Pyxidanthera barbulata, 413

Q

QUERCUS SUBER, 8

R

RABBIT TRAP, PRIZE FOR, 444
Rainfall at Horsley Hall in 1927, 38
Ramondia (Jankaea) Heldreichii,42, 79
Ranunculus nyssanus, 208; R. parnassifolius, 25, 42
Raphiolepis japonica var. Delacouri, 227
Raspberry plantations, new, 87
Rayner, M. C. (*Mycorrhiza*), 141
Reader, Mr. Frank, the late, 305, 321; presentation to, 37, 273, 307
Reaseheath, early-flowering Chrysanthemums at, 409
Research work in British Guiana, 366
Red Currants, 106
Red spider on fruit trees, 285
Rhabdothamnus Solandri, 43
Rhamnus alaternus, 395
Rhododendron Association, 55, 131
Rhododendron imberbe, 212; R. ponticum var. cheiranthifolium, 371; R. punctatum, 395
Rhododendron prospects, 137,
Rhododendrons, 155; greenhouse 253; some dwarf, 172
Rhodochiton volubile, 43
Rhubarb, 161; and its wholesomeness, 107, 162; forced, 69, 107, 143, 197, 284
Richmond's Terrace Gardens, enlarging, 307
Ridley, Mr. H. N., 330; honour for, 222
Roads of remembrance, 336
Robinia Pseudacacia, 26
Rock Garden, Crichton Royal, Dumfries, 433
Rohde, Eleanour Sinclair (*Gardencraft in the Bible and other Essays*), 420
Rosa lutea Harissoni, 247
Rose American Pillar, 118; Chaplin's Pink Climber, 412
Rose Conference, International, 389
Rose Garden, 25, 118, 173, 247, 412
Rose-lover's library, a, 67
Rose: pruning an old standard, 300; the old double yellow Scotch, 25; trees, imported, 367
Rose trial ground, National Rose Society's new, 348
Roses: climbing, 118; deformed, 460; faked, 290; mulching, 16, 51, 118, 180, 235; pruning, 234; some of the newer American, 68
Rowe, Mr. Walter, 204
Royal Caledonian Horticultural Society, 38
Royal Gardeners' Orphan Fund,329, 421
Royal Horticultural Society, 111; award of medals and cups, 2; Gardens Club "Journal," 184
Rubus arcticus, 312
Rumania, the weather in, 38
Runner Beans, 359
Rushes for chairs, shortage of, 51
Russell, Mr. L. R., 408

S

SACCOLABIUM BELLINUM, 7
St. Anne's Hill, Chertsey, 444
Saintpaulia ionantha, 116
Salads, autumn and winter, 5
Salix alba in the Oxford Botanic Garden, 330; S. cinerea var. Medemii, 191

Salsify and Scorzonera, 321
Salvia splendens as a standard, 282
Salvias, bedding, 134
Saponaria bellidifolia, 370; S. Vaccaria, 118
Saxifraga Borisii, 190; S. bryoides, 226; S. Burseriana sulfurea, 246; S. Cymbalaria, 171; S. granulata, 80; S. granulata fl. pl., 69; S. Irvingii, 246; S. James Bremner, 335; S. peltata, 353
Scholarships at Wisley, 74
School bulb competition, 274
School for young gardeners in Rome, 331
Scorzonera purpurea, 370
Scotland, garden notes from south-west, 83, 153, 211 295, 372, 468
Scotland, Sugar-beet prospects in, 56
Scottish Horticultural Advisory Committee, 147, 367
Seaweed, a new use for, 55
Sedum kamtschaticum, 352; S. spectabile, 25, 209
Seeds from abroad, British, 94; sowing small, 107
Selliera radicans, 62
Senecio Clivorum, 413; S. scorzoneroides, 465
"Seven Sisters" of Holloway, 93
Shallot, the, 69
Shrepfer, Frank A. (*Hardy Evergreens*), 455
Sidalcea candida, 60
Sidalceas, new, 60
Silene Hookeri, 352, 355
Silver Cup for Paeonies, 408
Simar Roto-Tiller, the, 219
Sisal and Manila fibres, sea-water tests of, 113
Sisyrinchium grandiflorum, 62
Sitka Spruce, damage to, in British Columbia, 26
Skirrets, 254
Slugs, the destruction of, 253, 300, 361, 384
Smellie, Mr. John, honoured, 426
Snowdrop, a giant, 180
Snowdrops: and Winter Aconites, naturalisation of, 215; at Burford, 87

Societies:—American Delphinium, 448; Antibes Floral Exhibition, 238; Association of Parks and Botanic Gardens Superintendents, 363; Banffshire Horticultural, 89; Berlin Spring Show, 442; Birmingham and Midland Gardeners', 164, 238; British Florists' Federation, 109, 460; British Mycological, 145, 304; Cardiff and District Gardeners, 71, 144, 164, 220, 272; Deeside (Aberdeen) Field Club, 362; Derbyshire Horticultural 200, 471; Dublin Naturalists', 441; Economic Biologists, 35; Edinburgh and East of Scotland Potato Trade, 144; Elgin Horticultural, 71; Falmouth Spring Show, 302; Fédération Horticole Professionnelle Internationale, 361; Gardeners' Royal Benevolent Institution, 88; General Bulb Growers' of Haarlem, 220; Ghent Quinquennial Exhibition, 297, 321; Glasgow and West of Scotland, 70, 144, 460; Glasgow Spring Show, 225; Guildford and District Gardeners', 70, 109, 128, 144, 220, 460; Guildford and District Rose, 53, 237; Horticultural Club, 181; Instow Spring Flower Show, 271; Iris Show, 439; Kilmarnock Bulb Show, 271; Kingston and Surbiton Chrysanthemum, 110; Leeds Paxton, 441; Leicestershire Agricultural, 442; Leicester Chrysanthemum, 144; Lincolnshire Daffodil, 288; Lincolnshire Gardeners', 146; London Daffodil Show, 286; Manchester and North of England Orchid, 108, 181, 200, 220, 238, 345, 471; Marlow Chrysanthemum, 457; Midland Daffodil, 323; Moray Field Club, 363, 445; Mossport (Glasgow) Horticultural, 90; National Auricula and Primula, 304; National Carnation and Picotee, 91; National Chrysanthemum, 108; National Rose, 70, 301; National Tulip, 344; National Viola and Pansy, 406; Newcastle Horticultural, 302; New York Horticultural, 362; New York Orchid Exhibition, 424; Norfolk and Norwich Horticultural, 304; Orchid Club, 88, 182, 305; Paisley Florists', 271; Professional Gardeners', 53, 239; Reading and District Gardeners', 17, 53, 90, 164, 238, 271, 441; Rhododendron Association, 326; Royal Caledonian Horticultural 238; Royal Gardeners' Orphan Fund, 145, 329, 387, 421; Royal Horticultural, 16, 51, 89, 126, 162, 198, 236, 269, 303, 342, 374, 401, 421, 457, 472; Royal Horticultural of Ireland, 342; Salisbury Gardeners', 53, 108, 146, 200, 239, 272; Société Nationale d'Horticulture de France, 456; Société Royale d'Agriculture et de Botanique de Gand, 297, 321; Spalding Bulb Growers, 128; Tamar Valley Spring Show, 269; Three Counties Agricultural Show, 471; Truro Spring Show, 362; United Horticultural Benefit and Provident, 53, 144, 200, 288, 387, 471; Wakefield and North of England Tulip, 441; Western Commercial Horticultural, 238; Wiltshire Agricultural, 406; Yorkshire Flower Show and Gala, 459

Sonerila deflexa, 140; S. fusca, 140
Sophora japonica, 61
Sorbus arranensis, 155
Sorrel, 254
South African Botanical "Journal," 166
South coast beauty spot, destruction by fire of, 2
Southport flower show, 462
Spae, M. François, 242
Sparrows and the flowering Currant, 87
Spartium junceum, 430
Spiderwort, the Mexican, 162
Spiraea japonica alba, 80
Spur pruning fruit trees, the effect of soil on, 142
St. Fagan's Castle, 337
St. Valentine's Day, flowers on, 136
Stellaria radicans, 24
Sterility, flower and fruit, 176
Stifftia chrysantha, 78
Strawberry disease, the, 243; the Lanarkshire, 268
Strawberry Fillbasket, 455
Strawberry plants, inspection and certification of, 308
Strawberry troubles, 161, 197, 234, 267, 320, 400
Strawberries, 341
Stuttgart Park, 112
Sugar Beet factories, support for new, 74
Sugar Beet in Scotland, 3, 56
Sulphur, 252; the value of, 179
Superphosphate: and Peas, 34; and Potatos, 69, 161, 181; and seeds, 125
Sweet Pea "Annual," 166
Sweet Rockets, 314
Sweet William, the double dark, 25, 87
Symphoricarpus orbiculatus, 117
Synthyris reniformis, 80

T

TABERNAEMONTANA CORONARIA, 294
Tambourissa quadrifida, 294
Tarragon, 142
Taxodium distichum, 26
Taylor, G. C. (*Primulas for Garden and Greenhouse*), 120
Taylor, Mr. H. V., Honour for, 407
Temple Gardens, new fountain in the, 347
Tenancy agreements and leases, 68
Tiarella cordifolia, 228
Tirley Garth, Tarporley, rainfall at, in 1927, 21
Tomato plants diseased, 442
Tomatos, 179
Trachystemon orientale, 314
Travelling research fellowships, 258
Trade Marks, the latest, 92, 255, 364
Trade notes, 17, 54, 91, 164, 219, 256, 328, 345, 363
Tree Nursery Conference in Germany, 130
Trees at Kew, damage to, 130
Trees and Shrubs: 8, 26, 44, 61, 78, 101, 117, 137, 155, 173, 191, 227, 266, 279, 294, 314, 335, 355, 371, 395, 412, 430, 448, 463; a French method for inducing the quick establishment of, 87, 218; choice, 61; planting in early spring, 116; damage to by frost, 453
Trelease, W. (*Winter Botany*), 30
Trespassers and the law, 281
Trinidad Botanic Gardens, 426
Triteleia uniflora, 430
Trollius yunnanensis, 371
Tropaeolum polyphyllum, 312
Tucker, Mr. S. W., 56
Tulipa praestans, 247; T. saxatilis 235
Tulips, "breaking" of, 84, 425, 470; collapsing, 442; in the London Parks, British, 331
Tunica saxifraga, 98

U

UTRECHT AUTUMN EXHIBITION, 445

V

VACCINIUM MORTINIA, 314
Vancouveria hexandra, 370
Vegetable garden, 33, 50, 69, 107, 125, 142, 161, 180, 196, 219, 235, 254, 269, 321, 359, 455
Vegetables, the medicinal value of, 385
Veltheimia viridifolia, 116
Venidium fastuosum, 430
Verbascum pannosum, 209
Veronica incana, 370; V. Lyallii, 246; V. Teucrium dubia, 352
Versailles, the new French Kew at, 154
Victoria Medal of Honour, award of the, 2
Vienna, street trees in, 444
Vilvorde Horticultural College, 184
Vinca rosea, medicinal value of, 275
Vine culture in Pekin, 439
Viola Howellii, 51; V. rupestris, 278
Violas, a revision of, 48, 63, 85, 160, 172, 215, 230, 282, 315, 454, 465
Vita-glass tests, 462
Voelcker, Dr. A., honour for, 407

W

WAHLENBERGIA SERPYLLIFOLIA, 413
Waldsteinia geoides, 263
Walker, Miss Winifred, 408
Wallflowers, 448
Wardlaw, Dr. C. W., appointment of, 185
Ward, Mr. F. Kingdon: botanical collections of 1924-25, 57; ninth expedition in Asia, 28, 64, 102, 138; tenth expedition in Asia, 414, 450, 451
War trophies, unwanted, 21
Water-cress, 286
Water Garden, 370, 412
Watsonia Meriana var. O'Brienii, 226
Watsonias, 218; White, 456
Weather in France, the severe, 367
Wedding at Woodbridge, 426
Welsh garden, notes from a, 105, 210, 317, 397 468
Welwyn, The Node Gardens, 427
West Park, Wolverhampton, 366
West Somerset, effects of past winter in, 453
White, Mr. Harry, 184
Wiesner, Professor Julius von, memorial to, 56
Wiggie, Surrey, 264
Wilde, M. Henri de, 366
Wild flowers in Germany, protection for, 130
Wild Roses, early, 412
Willett, Memorial to William, 365
Willow, a beautiful, 191
Wilson, E. H. (*Plant Hunting*), 158
Wilson, Professor Beecher, honour for, 366
Wimbledon, new recreation ground for, 462
Winter, the aftermath of, 307, 384, 439, 453
Wireworm parasite, a, 94
Wireworms: and Click Beetles, 217 some notes on, 217
Wisley: notes from, 82, 136, 227, 316, 372, 000; Royal visit to, 407; scholarships at, 74
Wistaria a giant, 274
Woad industry, the extinct, 57
Wolstenholme, Mr. T. E., 444
Wurzburg, horticultural exhibition at, 242

X

XANTHOSOMA LINDENI, 334

Y

YAM, A CURIOUS, 241
Year, the Old and the New, 1
Yellow wild flower in a wood, 442
Yew and other poisonous trees, 194

LIST OF ILLUSTRATIONS.

A

ADIANTUM FLABELLATUM, 447
Aethionemas at Glasnevin, 398
Aethionema pulchellum, 185
Aloe insignis, 153 ; A. plicatilis, 152
Androsace sarmentosa, 119
Antirrhinum sempervirens, 449
Apple Highview Pippin, 68
Apple cultivation, a new intensive system of, 341, 351, 357, 359
Apple pests, two lesser known, 416, 417, 418
Araucaria Bidwillii, fruiting branch of, 331
Aristolochia Lindneri : cultivated plant, 81 ; natural plant, 80 ; section of flower, 81
Artindale, Mr. J., portrait of, 74
Atkinson, Mr. William, portrait of, 2
Azalea indica Charme de Noel, 245
Azaleas, Rhododendron ledoides and R. calostrotum at Glasnevin, 398

B

BALSAMS IN REGENT'S PARK, LONDON, 295
Barton, Major W., portrait of, 94
Begonia Florence Bigland, 377 ; B. nitida var. Prince Eugen, 369
Bodnant, Taly-Cafn, North Wales : view of, 155, 156, 157, 158, 159
Browallia speciosa major, 97
Bulbophyllum Binnendijkii, 394
Butler, Mr. J., portrait of, 222

C

CALANDRINIA GRANDIFLORA, 6
Calanthe striata var. Buttercup, 311
Calceolaria Darwinii, 390
Calderhead, Mr. David, portrait of, 20
Camellia rosaeflora var. fl. pl., 137
Campanula Aucheri, 431
Cassiope selaginiodes, 207
Catasetum Garnettianum, 151
Celmisia spectabilis, 95
Chelsea Show : exhibits at the, 379, 383, 393, 395, 399, 401, 403, 404, 405, 422, 423, 463
Clematis montana var. rubens, 61
Cock, M. Lucien de, portrait of, 274
Commemoration Cup, the, 166
Cornus florida, 173
Corypha Utan in the Buitenzorg Botanic Gardens, Java, 26, 27
Cotoneaster : a new hybrid, 44 ; C. Watereri in fruit, 45
Cotyledon japonica, 116
Coutts, Mr. J. portrait of, 4
Crindonna memoria Corsii, 99
Cupressus sempervirens var. pyramidalis at La Mortola, 225
Cymbidium Landrail var. Ophir 205 ; C. Lilian Sander var. aureum, 133 ; C. Rosanna var. Magnolia, 247
Cypher, John, portrait of the late 71
Cypripedium Bedouin var. aureum, 57

D

DACTYLOPSIS DIGITATA, 338, 339
Daphne caucasica, 227
Dianthus calalpinus, 171
Disporum oreganum, 77
Ditch and hedge, plan of a, 316
Douglas Fir, disease of, 105
Drymoglossum carnosum var. minor, 115

E

ERYNGIUM PROSTRATUM, 208

F

FALCONER, MR. ALLAN, PORTRAIT OF, 4
Flower beds, plan of, 189
Fraser, Mr. George, portrait of, 348
Fremontia mexicana, 335

G

GAZANIA RIGENS (SYN. SPLENDENS), 47
Gentiana septemfida, 117
Ghent Exhibition, views of, 297, 299, 308, 309, 313, 315, 319, 322, 323
Gilden, Mr. W., portrait of, 4
Glasnevin, views at, 398
Glottiphyllum fragrans, 14 ; G. linguiforme, 13 , G. Neilii, 49 ; G. regium, 123 ; G. suave, 13 ; G. surrectum, 49
Glyptostrobus pensilis in China, 9
Golf greens, treatment of, 409

H

HALL, MR. CECIL, PORTRAIT OF, 426
Harrison, Mr. A. T., portrait of, 5, 130

I

IRIS SIBIRICA VAR. CAESOR AND J. S. VAR. OTAWA, 429 ; I. Romance, 445

J

JARDIN EXOTIQUE, MONACO : SUCCULENTS IN THE, 191, 192, 193, 195
Jeffrey, Mr. J. T., portrait of, 38
Jolis, Mr. H., portrait of, 290

K

KERCHOVE DE DENTERGHEM, M. LE COMTE A. DE, PORTRAIT OF, 148

L

LAELIO-CATTLEYA GWENDOLEN LEACH, 167
Lander, Mr. H., portrait of, 112
Leptospermum scoparium var. roseum multipetalum, 131
Lewisia Tweedyi at Wisley, 317
Lilium Alexandrae, 11 ; L. centifolium at Hidcote Manor, 101 ; L. taliense (?), creeping stem of, 11 ; L. tigrinum, capsules of, 280, 281
Lupinus lepidus, 63

M

MECONOPSIS : A NEW HYBRID, 353 ; M. superba, 229
Monastry of Haghios Dionysios, 43
Monro, Mr. George, portrait of, 258
Musgrave, Mr. C. T. portrait of, 462
Myosotis alpestris, 223

N

NARCISSUS, CLWYD, 283 ; N. J. K. Ramsbottom, 275 ; N. Mystic, 291 ; N. serotinus in Spain, 24 ; N. Trewirgie, 243

O

ODONTOGLOSSUM MONA VAR. REGINA, 391
Odontioda Mrs. R. F. Felton, 397 ; O. Rubicon, 277
Odontoglossum Thetis, 135
Odontonia Amoena, 59 ; O. Sappho, 375
Oenothera Drummondii, 41
Olympia, gardens at, 177, 178
Omphalogramma vinciflorum, 373
Oncidium Sanderae, 7
Orchis longibracteata, 175

P

PATEMAN, MR. T., PORTRAIT OF, 4
Pests of Apple trees, 416, 417, 418
Phlox divaricata var. Laphami, 263
Pinus contorta, 232, 233 ; and P. Murrayana, 233 ; P. Thunbergii, branch of, 231
Polygonum vaccinifolium, 433
Potentilla fruticosa var. Veitchii, 79
Primula nutans, 381 ; P. serratifolia, 121
Pyrus baccata, fruiting branch of, 75 ; P. Malus, Russell's Weeper, 279
Pyxidanthera barbulata, 413

Q

QUERCUS SUBER AT PAINS HILL, SURREY, 3

R

RAMONDIA (JANKAEA) HELDREICHII, 42
Ranunculus parnassifolius, 25
Reader, the late Frank, portrait of, 305
Rhabdothamnus Solandri, 39
Rhododendron imberbe, 213 ; R. keleticum, 333
Rhododendrons exhibited by Lionel de Rothschild, Esq., group of, 343
Ridley, Mr. H. N., portrait of, 330
Robinson, the late Francis, portrait of, 345
Rosa lutea Harissoni, 251 ; R. multibracteata, 169
Roses : American Pillar, 113 ; Chaplin's Pink Climber, 411 ; May Wettern, 301
Royal Horticultural Society's new hall, 466, 467, 469
Russell, Mr. L. R., portrait of, 408
Rowe, Mr. Walter, portrait of, 204

S

SAPONARIA BELLIDIFOLIA, 367
Saxifraga James Bremner, 337
Senecio scorzoneroides, 465
Sidalcea Mrs. D. J. Coleman, 60
Snowdrops at Monreith, 149
Spae, M. François, portrait of, 242
Sterropetalum Pillansii, 266
Sulphur : flowers of, 252 ; special dusting, 252
Synthyris reniformis, 83

T

TAMBOURISSA QUADRIFIDA, FRUITS OF, 293
Tomalin, Mr. T. E., portrait of, 5
Trollius yunnanensis, 371
Tucker, Mr. S. W., portrait of, 56
Tulips, "breaking" in, 435

V

VANDA HOOKERIANA, 187
Venidium fastuosum, 427
Verbascum pannosum, 209

W

WARD'S, MR. F. KINGDON, ninth expedition in Asia, views of, 28, 64, 65, 102, 103, 104, 138, 139 ; tenth expedition in Asia, views of, 414, 415, 450, 451
Watsonia Meriana O'Brienii, 226
Weston, Mr. J. G., portrait of, 5
White, Mr. H., portrait of, 184
Wiggie : views in the garden at 259, 261, 264, 265
Wilde, M. Henri de, portrait of 336
Wolstenholme, Mr. T. E., portrait of, 444

SUPPLEMENTARY ILLUSTRATIONS.

Bodnant from the Lily Terrace (March 3).
Buenos Aires, Rosedale Gardens at (January 7).
Daffodils by the waterside at Knollwood, New York (April 21).
Daffodils in the woodland at Knollwood, New York (June 2).
Locke Park, Barnsley (June 10).
Lupinus polyphyllus in the Royal Gardens, Kew (April 7).
Nymphaeas at Blyth Hall (February 18).
Salix alba in the Oxford Botanic Garden (May 12).
The Canal Terrace, Bodnant, Taly-Cafn, North Wales (March 24).
Water Garden at Sutton Place, Guildford (January 21).
View of Nice from the Terrace Garden at La Selva (February 4).

THE

Gardeners' Chronicle

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CONTENTS.

Alpine garden—
  Calceolaria John Innes 6
  Codonopsis ovata ... 6
  Erodium corsicum... 6
  Pentstemon campanulatus ... 6
Atkinson, Mr. W. ... 2
Belgian Sweet Pea Society 2
Bog garden—
  Primula rosea ... 6
Bulb garden—
  Puschkinias ... 7
Chili and the Andes ... 12
Cypress, the Chinese Swamp 9
Fairlight Glen ... 2
Florists' flowers—
  New Chrysanthemums 8
Flower garden—
  Calandrinia grandiflora 6
Fruit garden—
  Some early Pears ... 15
Fruit register—
  Apple Brabant Bellefleur 15
  Pear President Barabe 15
"Gardeners' Chronicle" seventy - five years ago 3
Garden manures in January 14
Indoor plants—
  Hippeastrums ... 7
Kew, damage by snow at 2
Lilies in 1927... ... 10
Mesembryanthemum 13
Obituary—
  Barratt, G.... ... 17
  Smith, William ... 17
Orchid notes and gleanings—
  Oncidium Sanderae 7
  Saccolabium bellinum 7
Pavilion Gardens, Brighton 2
Plants for cold soils ... 8
Plants for pools ... 6
R.H.S. Awards of Medals and Cups ... 2
Rosedale Gardens, Buenos Aires ... 1
Societies—
  Reading Gardeners' 17
  Royal Horticultural 16
Trees and shrubs—
  Cotoneaster Simonsii 8
  Quercus Suber ... 8
Week's work, the ... 4
Year, the Old, and the New... 1

ILLUSTRATIONS.

Atkinson, Mr. W., portrait of 2
Calandrinia grandiflora 6
Coutts, Mr. J., portrait of 4
Falconer, Mr. A., portrait of 4
Glottiphyllum fragrans, 14; G. linguiforme, 13; G. suave 13
Gilden, Mr. W., portrait of 4
Glyptostrobus pensilis in China... 9
Harrison, Mr. A. T., portrait of... 5
Lilium Alexandrae, 11; L. taliense (?), creeping stem of 11
Oncidium Sanderae 7
Pateman, Mr. T., portrait of 4
Quercus Suber 3
Tomalin, Mr. T. E., portrait of... 5
Weston, Mr. J. G., portrait of 5

SUPPLEMENT PLATE.

View in the Rosedale Gardens, Buenos Aires.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 37°9.

ACTUAL TEMPERATURE—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London, Wednesday, January 4, 10 a.m. Bar. 30.2 Temp. 40°. Weather, Dull.

The Old Year and the New. THE year so recently ended was one that most gardeners would willingly forget. The late spring frosts, the May drought and the sunless, rainy summer all added to the weight of the burden a gardener has to bear, no matter how kindly the season may be. However, remembering that most of our troubles are those that do not happen, the year 1927 possessed many redeeming features. The late frosts, contrary to expectations, did comparatively little harm to fruit crops generally, and the Apple crop was one of the best in recent years. True, there was much weeding to be done, and gardeners who love to keep their gardens clean and tidy must have been more or less heart-broken, but, per contra, little or no labour had to be expended on watering and, at its best, artificial watering is a back-aching and not entirely satisfactory business. Roses were seldom finer or more continuously-flowering than in 1927, although the rain spoiled many flowers and filled up the floral cups of others so that they bent downwards with the weight of water. The National Rose Society's shows were good, and the Society added to its membership. Sweet Peas were suited by the cool, moist season, and continued to provide dainty blooms much later in the season than usual; the National Sweet Pea Society's show was especially good and flowers of excellent quality were exhibited so late as at the Southport Show in August, both from southern and northern growers. Carnations, perhaps, disliked the moist conditions more than most florists' flowers, nevertheless, there were few complaints from the enthusiasts who continue to cultivate and raise these fine border flowers. The pessimistic prophecies of many Chrysanthemum growers were not fulfilled, for the examples of the Queen of Autumn Flowers shown at the National Chrysanthemum Society's and other shows were as fine as the most exacting florists could wish, while the flower markets were rather more than adequately supplied with blooms from August until Christmas. But while very few have much to grumble about concerning the effects of the weather on their crops, another story has to be told concerning the attendance at flower shows. True, Chelsea Show, Southport Show and Shrewsbury were well attended, but many local societies find themselves with a depleted balance, and in some cases with a balance on the wrong side. The Walsall Society experienced a loss of £131, and it is very doubtful whether the Committee will hold an exhibition during the present year. Wolverhampton is in worse case, as West Park was flooded during the July show and there was a small attendance; the loss has been estimated at £859, but, fortunately, the Wolverhampton Town Council recognises the value of the show and has promised a guarantee against loss to the extent of £750 for 1928. The Cannock Horticultural Society will also have reason to remember 1927, as its loss, owing to wet weather, is estimated at £400. On the other hand, Birmingham Floral Fete resulted in an improved income of £60, and the Birmingham Chrysanthemum Society took over £40 more than usual, while the National Chrysanthemum Society's show, held in London, in November, attracted a record attendance and increased takings to the extent of about £25. We fear, however, that the Committees of many flower shows will have some difficulty in squaring their accounts for 1927, and especially those who depend upon summer weather and a large attendance at their shows for the greater part of their income. In Scotland and Ireland, the usual round of horticultural exhibitions was held with more or less success financially, according to the weather experienced. The Royal Horticultural Society experienced a successful year, increasing its Fellowship and adding to the reputation of its Chelsea Show; 1927 saw the last of its Holland Park Hall shows, but the special exhibitions of Daffodils, Orchids and fruits were well up to the average of extent and quality. The Society's Orchid Committee awarded twenty-six First Class Certificates and eighty Awards of Merit during the year. The Floral Committee granted six First Class Certificates and 175 Awards of Merit, while the Narcissus and Tulip Committee granted one First Class Certificate and eight Awards of Merit to novelties presented for its consideration. The National Chrysanthemum Society's Floral Committee considered the merits of about one hundred novelties and granted thirty-two First Class Certificates, thus proving that raisers are maintaining their good work, while at the same time the Committee has raised its standard of judgment. Comparatively few outstanding plants excited the enthusiasm of cultivators during the year under review. New Rhododendrons, as seen at the Rhododendron Society's show and other meetings, remain to be proved so far as their garden value is concerned. Meconopsis Baileyi and the Lilium shown as L. taliense were important subjects, but even so, their value as good garden plants has yet to be determined. The collecting of new plants continued. Captain Kingdon Ward started on his tenth expedition to Asia in search of Rhododendrons and other hardy plants. Mr. Clarence Elliott commenced a tour in Chili and the Andes, while Mr. Comber's finds in the Andes are looked forward to with interest. Finally, the new generation experienced what has come to be known as "old-fashioned Christmas weather," and while many young folks enjoyed the tobogganing and skating, many other people, old and young, suffered tremendous inconveniences, and in some cases hardships, as a result of the severe frosts, the "silver thaw" and the heavy fall of snow experienced during the concluding weeks of the Old Year. Trees and shrubs have also suffered, and many a gardener has a tale of woe to tell. After the snow, a thaw; after the thaw, floods; and as we write, the southern half of England is experiencing worse floods than have occurred for very many years. In spite of this, however, the New Year is ever a season of hope, and as all horticulturists are optimists they will endeavour to convert every "might have been" of 1927 into a "may be" in 1928. Many interesting functions are promised for the present year, and several are of unusual importance, notably the opening of the Royal Horticultural Society's new hall, probably in the early autumn; the completion of the new and very fine Kelvin Hall, at Glasgow; and the Ghent Quinquennial exhibition in April. The usual large provincial shows will be held, and Committees are busy drafting schedules and making arrangements for their annual exhibitions. Further, a Primula Conference is to be held at Westminster in May, and an International Exhibition of Garden Design, with a Conference, in October, both under the auspices of the Royal Horticultural Society. Increased enthusiasm is anticipated in connection with Rhododendrons, Irises, and Gladioli, and there is good reason to expect a continuation of interest in Roses, Sweet Peas, Dahlias, Carnations and Chrysanthemums. Science will continue to aid practice, and there will be a closer association of the two to the mutual advantage of both. Kew will continue to flourish, and Dr. Hill's tour will certainly increase the influence of our National Garden and add to the possibilities of its usefulness to our Dominions and Colonies. Improvements will continue at Wisley and, indeed, in every garden, for progress is indicated on every side. In conclusion, we offer our advertisers, contributors and readers sincere good wishes for the year upon which we have now entered.

Our Supplement Plate.—Many of the South American towns and cities have, during recent years, developed their public parks and spaces on liberal and beautiful lines, and, among the many, Buenos Aires occupies a very worthy position. The Botanic Gardens of Buenos Aires are fairly extensive, interesting and well-kept, and some of the parks and promenades are particularly fine. One of the most popular of the open spaces in the capital of the Argentine is the Rosedale Gardens, and the view presented in our Supplement Plate conjures up a scene of floral beauty and sunshine that cannot fail to excite admiration, although it may make us envious at this particularly wintry season. The illustration is from a photograph kindly sent us by Don Carlos C. Thays, the talented Director of the Buenos Aires Botanic Garden, whose portrait was given in our issue of September 4, 1926.

New Year Honours.—Horticulture and botany receive little recognition in the list of New Year Honours. Lt.-Col. G. A. Gibbs, who becomes a Baron, is interested in horticulture, and has a fine old garden at Tyntesfield, Flax Bourton, Somersetshire. Sir Frederick Lugard, formerly Governor-General of Nigeria, is known to botanists for his discovery of several interesting tropical plants; he also becomes a Baron. Mr. O. T. Faulkner, Director of Agriculture in Nigeria has been made a Commander of the Order of St. Michael and St. George, while Mr. A. G. Aspinall, Secretary to the West India Committee, becomes a Knight Bachelor of that Order. Mr. Aspinall was responsible for the West Indian exhibit at the British Empire Exhibition at Wembley, and is greatly interested in the cultivation of economic plants in the West Indies.

Victoria Medal of Honour.—The Council of the Royal Horticultural Society, at its meeting on December 13, 1927, awarded the Victoria Medal of Honour in Horticulture to Mr. F. R. S. Balfour, M.A., D.L., J.P.; Mr. J. G. Millais; Dr. O. Stapf, F.R.S., F.L.S.; Mr. Harry White; Mr. J. T. White and Mr. P. D. Williams.

R.H.S. Award of Medals and Cups.—The Council of the Royal Horticultural Society announces the following awards:—The Lawrence Medal to Mr. G. G. Whitelegg, for his rock garden exhibit at the Chelsea Show, 1927. Veitch Memorial Medals: Gold Medal to Professor L. H. Bailey, for his scientific work on behalf of horticulture; Gold Medal to Mr. John Basham, for his general services in fruit cultivation; Gold Medal to Mr. Frederick J. Hanbury, F.L.S., V.M.H., for his work in the preservation and cultivation of the British flora and in raising Orchids; and a Silver Medal and £50 to Mr. Frank Reader, on his retirement from the service of the Society. The Cory Cup, to Mr. W. B. Cranfield, for Paeonia Orion. The Loder Rhododendron Cup, to Mr. E. H. Wilson, M.A., V.M.H., of the Arnold Arboretum, in recognition of his work in introducing and describing Rhododendrons and Azaleas. The George Moore Medal, to Messrs. Armstrong and Brown, for Cypripedium Chardmoore var. Mrs. Cowburn. The Sander Medal, to Baron Bruno Schröder, for Miltonia Wm. Pitt, Dell Park var. These Cups and Medals will be presented at the Annual General Meeting of the Society, on Tuesday, February 14, at 3 p.m.

The Pavilion Gardens, Brighton.—Consternation has been caused among lovers of gardens and gardening in Brighton by the proposal to build a large hall in the well-known Pavilion Gardens. As is so widely known, Brighton possesses exceedingly beautiful public gardens, and the principal charm of the grounds through the valley of the Old Steyne and by the Aquarium lies in their uninterrupted vistas. If this proposal to build a large assembly hall in the Pavilion Gardens is carried out, the vista from the Valley Gardens will be irretrievably lost. There is no question but that Brighton does need a commodious hall for gatherings and banquets of all kinds, but to carry out the present proposal is nothing short of vandalism, and it is sincerely to be hoped that the Brighton Town Council will be induced to reconsider its decision and to seek elsewhere a site for a hall worthy of the town.

The Sight of Birds.—Most of us must have often marvelled at the faculty wild birds possess of detecting our approach whilst, apparently, intent on feeding on our crops. As irate gardeners also discover, birds show an uncanny intuition concerning the range of a shot-gun. A small bird, whilst feeding on the ground, will instantaneously discover a hawk hovering so high in the sky as to appear as a mere speck to the human eye. The explanation is that the two eyes of a bird do not focus, but are capable of two kinds of vision—one monocular, the other binocular—so that while one eye may be intent on searching for minute seeds on tiny insects, the other may range for possible enemies. Dr. A. Wetmore, of the Smithsonian Institute, in a most valuable and interesting communication to the *Scientific American*, also states that, after thirty years' observation in various parts of the New World, he is convinced that many birds have two distinct centres of sharp vision for these two types of sight.

Mr. W. Atkinson, J.P.—The stalwart figure of Mr. W. Atkinson is well-known in the horticultural world, and has been known to several generations of horticulturists, for in former years he attended all the principal gatherings throughout the United Kingdom, and during forty years he has not missed the meetings of the Royal Horticultural Society at the Temple Gardens and Chelsea. Mr. Atkinson is the Managing Director of Messrs. Fisher, Son and Sibray, Ltd., of the Royal Nurseries, Handsworth, Sheffield, and is justifiably proud of the position he has held for so many years as head of a business that was established over 180 years ago. His firm was the first to exhibit hardy trees and shrubs out-of-doors at the old Temple shows, and since then out-door exhibits have become a great feature of all the leading exhibitions in the country. For nine years in succession, Messrs. Fisher, Son and Sibray secured the premier award for hardy trees and shrubs at the Temple shows, and in 1904, they obtained a Gold Medal for their display, while at the International Horticultural Exhibition held at Chelsea in 1912, they were awarded a Large Gold Medal and also the Suffolk County Cup for a particularly fine exhibit. The nurseries at Handsworth are famous for many things, and particularly so for the wonderful collection of specimen Hollies it contains—a collection probably unequalled in any other trade establishment. On December 21, 1877, Mr. and Mrs. Atkinson were married at Bridlington; they have just celebrated their golden wedding and have been the recipients of congratulations from all parts of the world—congratulations to which we add our own. Among the many presents received, none has given Mr. and Mrs. Atkinson so much pleasure as the solid silver tray, suitably inscribed, presented by the employees of Messrs. Fisher, Son and Sibray. Like most other busy men, Mr. Atkinson has taken up duties outside those of his own business. He is a Justice of the Peace for the East Riding of Yorkshire, and has fulfilled the duties of that position for twenty years. We trust he will continue to do so for many years to come.

MR. WILLIAM ATKINSON, J.P.

Belgian Sweet Pea Society.—The general meeting of the Belgian Society of Sweet Pea enthusiasts, known as "Les Amis du Pois de Senteur," took place on December 18, at the Brussels Botanic Garden. In spite of the intense cold, the meeting was well attended by members, even from distant parts of the country. M. Lambeau presided, assisted by MM. Roekens and Boddewyn. One of the chief subjects for discussion was the arrangements for the fifth exhibition, the date of the opening of which was fixed for June 30, 1928. It was also decided to form a fund for the annual provision of a Cup, to be competed for at the Brussels horticultural exhibitions, which would help to popularise the Sweet Pea, both among growers and among amateurs.

Destruction by Fire of South Coast Beauty Spot.—At the end of the past week, the large area of open downland above the famous Fairlight Glen, at Hastings, was swept by an alarming fire which consumed many acres of Gorse. At one time fears were entertained for the safety of three members of the Coastguard service, but, fortunately, they escaped safely, though one was inside their concrete hut when the fire passed through and around. Several theories as to the origin of the outbreak were advanced, and an expert investigation of the circumstances is being made. These Fire Hills, as the area is known, was one of the beauty spots of the south coast, and were supposed to have been so named because in the Armada days beacon warning fires were lighted on them. The destruction of the Gorse is so widespread that it will be fully four years before the beauty of the downland is restored.

The Royal Gardeners' Orphan Fund.—The Annual General Meeting of subscribers to the Royal Gardeners' Orphan Fund will be held at Simpson's Restaurant, Strand, London, on Wednesday, February 15 next, to transact the usual business appertaining to an annual general meeting. The chair will be taken at 3 p.m. Nominations of eligible orphans should be sent to the Secretary, at 19, Bedford Chambers, Covent Garden, London, W.C.2, at an early date.

National Rose Society.—The fifty-first Annual General Meeting of the National Rose Society will be held at Caxton Hall, Victoria Street, Westminster, S.W.1 (nearest Station, St. James's Park), on Wednesday, January 18, at 2.30 p.m. Members are cordially invited to tea and light refreshments after the meeting, which is expected to be over by 3.45 p.m. No tickets will be required.

State Credits for Italian Farmers.—The Home Office in Rome has made arrangements with a number of the principal banks and insurance companies to provide loans for the betterment of Italian agriculture. The credits will involve a total sum of two milliard lire, approximately £21,740,000.

Damage by Snow at Kew.—Not within the memory of the oldest members of the Kew staff have the weather conditions played such havoc among the trees and shrubs in the Arboretum and pleasure grounds as happened on Christmas night. Evergreen trees suffered the most, but deciduous trees, notably the Crataegus, and the Brooms—Cytisus and Genista—have many broken and maimed branches. The greatest damage is among the Conifers, the Evergreen Oaks and the Arbutus. Several specimens of the last, near King William's Temple, are hopelessly ruined, and a number permanently disfigured. Many of the Atlas Cedars and Deodars, along the Broad Walk, the Pagoda Vista and the Cedar Avenue have lost many branches, leaving gaps which the lapse of time may not be able to fill. The Pinetum, at the south end of the lake, is strewn with branches. The worst damage is the loss of the two lower limbs of the large specimen of Pinus Coulteri. Many branches are broken, or badly twisted, on numerous specimens of Pinus excelsa throughout the gardens. Worst of all, perhaps, is the damage to the Cupressus and Thuya collections. A number of trees have been uprooted, several snapped off to a few feet from the ground, while the collected debris of limbs and branches extends to many cart-loads. Many of the Evergreen Oaks (Quercus Ilex) which are an important feature of Kew, are badly damaged, the destruction ranging from a number of limbs, comprising goodly proportions of several trees, to innumerable large and small branches. The large group of the evergreen Ceanothus thyrsiflorus, near the Horse-shoe Beds along the Broad Walk, has suffered severely, and in some cases the tops of the large bushes, or small trees, have been broken out. It will probably be some time before the full extent of the damage can be ascertained, for many of the trees and shrubs were still enveloped in snow at the beginning of the week.

The Queen and the Linnean Society.—Her Majesty the Queen has graciously consented to become an Honorary Member of the Linnean Society of London.

Sugar Beet in Scotland.—In a return published by the Board of Agriculture for Scotland, particulars are given of the extent to which Sugar Beet has been cultivated in the different counties in Scotland. Fife heads the list with a total area of 3,819 acres, as compared with 1,178 acres in 1926, while East Lothian is credited with 1,130 acres, as against 163. The principal returns from other counties are given below, together with the comparing figures, in parenthesis, for 1926:—Forfar, 777 acres (163); Ayr, 760 (668); Perth, 674 (237), and Berwick, 504 (109); Roxburgh grew 253 acres; Aberdeen, 366; Moray, 267; Ross and Cromarty, 167; Banff, 77; and Nairn, 27. Peebles and Inverness had no land under Beet cultivation, and Selkirk had only three acres. In view of the reduction in the subsidy to manufacturers of home-grown sugar from 19s. 6d. per hundredweight to 13s. for the next three years, and the lower terms offered to farmers as a consequence, there is considerable uncertainty regarding the future of the Sugar Beet crop.

Disappearance of the Common Holly in Germany.—According to a German contemporary, the common Holly is becoming very scarce in the north-west of Germany, where formerly it was widely distributed. Ilex Aquifolium, to give it its botanical name, thrives best in damp climates, and modern forestry methods, which have largely done away with the old, original woodlands, do not suit it, with the result that it is tending more and more to disappear. It is, however, still to be met with in the form of garden specimens, carefully planted and tended. Another cause of the dwindling of the wild plants, besides the alteration in general conditions, is its extensive use by florists as wreath-making material. It is unfortunate that wreath-makers do not remember that their depredations are going far towards destroying altogether a very beautiful feature of the countryside in that part of Germany, and it is seriously suggested by some nature lovers that the use of I. Aquifolium by florists be prohibited, especially as there are plenty of more common materials which are equally suitable. Indeed, in some parts of the country the species is already protected by law, and it is forbidden to pluck it, cut it, or use the berries and leaves for decorations.

Appointments for the Ensuing Week.—MONDAY, JANUARY 9: Derbyshire Horticultural Association's meeting; United Horticultural Benefit and Provident Society's meeting; Birmingham Gardeners' Association's meeting. WEDNESDAY, JANUARY 11: Sheffield Chrysanthemum Society's meeting; London Gardens Guild lecture; Wimbledon Gardeners' Society's meeting; Burton-on-Trent and Shobnall Chrysanthemum Society's Annual Meeting; Royal Caledonian Horticultural Society's meeting. FRIDAY, JANUARY 13: Manchester and North of England Orchid Society's meeting; Royal Horticultural Society of Ireland meeting.

"Gardeners' Chronicle" Seventy-five Years Ago.—*The Golden Pippin Apple.*—At p. 791 of last year's volume, it is related that on the 7th December, there were exhibited "beautiful examples of the true old Golden Pippin. These had been trained on an east wall, from which fine, healthy crops are annually gathered; while from standards of this variety in the same garden, the fruit is cankered and bad; surely going far to prove that instead of the Golden Pippin wearing out, as some imagine, the fact is, it is really too tender for our climate." On this point, recollections so far back as above seventy years would, on the contrary, seem to indicate that the true Golden Pippin is really a worn-out variety; for some seventy years ago Golden Pippins were sold by the bushel in Covent Garden Market. They were in equal plenty with the old Pearmain and old Nonpareil. If recollection fails not, the usual price at that time for all these sorts varied from 4s. to 5s. a bushel, whilst less esteemed varieties were from 2s. 6d. to 3s. or 4s. The Golden Pippin was then a very common dessert Apple; it was the kind chosen for stewing as a supper dish, though never used for puddings. This abundance seems to prove that at that time the Golden Pippin was cultivated as a standard tree. I remember well, that the usual supply of this fruit failed almost suddenly, and that the scarcity of this variety in our markets was attributed to the Empress of Russia, who having taken a fancy for it, her agents had bought up all that was for sale at the enormous price of a guinea a bushel. However this might have been, the Golden Pippin never was again plentiful. Soon afterwards, some trees of the kind in my father's orchard at Pimlico became cankered, and ceased to bear fruit; but in one favoured spot on the south coast, the soil being a deep, rich loam, on a gravelly bottom, standard trees of the sort continued healthy, and bearing abundantly, to my knowledge down at least to the year 1815. *B. Gard. Chron., January* 1, 1853.

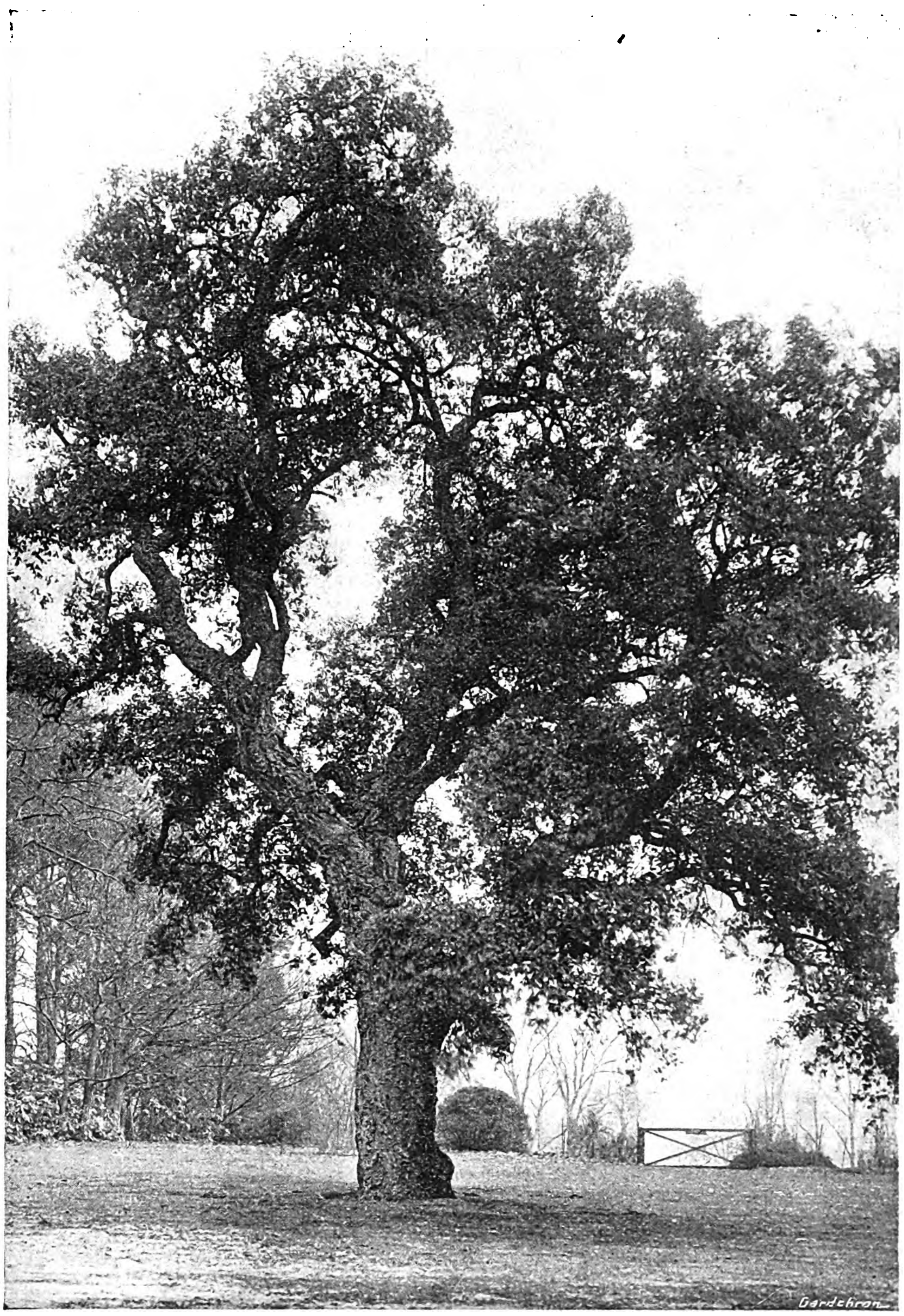


FIG. 1.—QUERCUS SUBER AT PAINS HILL, COBHAM, SURREY.
(see p. 8).

Publication Received.—*Trees and Shrubs for Seaside Planting,* by G. N. Smith; T. Smith, Daisy Hill Nursery, Newry; price 1s.

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN MOORE, Manchester.

General Remarks.—At this season of the year, Orchids require all the light possible to keep them in vigorous health, therefore the cleansing of the roof-glass, both inside and out, should be attended to regularly throughout the winter months. Where collections of Orchids are grown near large towns, or in manufacturing districts, the outside roof-glass should be washed every week during the winter; even after heavy rains the lower panes of glass are often thickly coated with dirt. It is also necessary to rub down the inside of the glass occasionally, even after the annual washing, as the condensed moisture retains a considerable amount of dirt, especially in cool houses where more air is admitted. Although these matters entail a great deal of labour the work is well repaid, for, with the extra light gained, the temperatures are more easily maintained, the foliage and flower spikes become stronger, and root action is greatly benefited, resulting in the production of better flowers than would be possible under semi-darkened conditions.

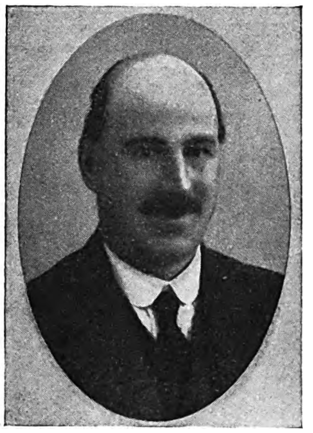
Temperatures.—The sudden changes of the weather at this season make it difficult to maintain a stated temperature, but the following figures may serve as a general guide:—East Indian or warm house, day 65° to 70°; night 60° to 65°; Cattleya or intermediate house, day 60° to 65°; night 55° to 60°; cool or Odontoglossum house, day 55° to 60°; night 50° to 55°. The highest temperature should be reached about noon and the lowest early in the morning. In severe weather it is better to allow a slight fall rather than use excessive fire heat to maintain a rigid adherence of the figures given. The maintenance of proper atmospheric conditions is one of the first essentials in successful Orchid culture. The grower should be able to tel on entering the house whether the atmosphere is according to the requirements of the plants, and should use his discretion with regard to damping down, watering, ventilating, etc. If the temperature has fallen much below the figures quoted it is not advisable to commence watering or damping until there is a decided rise. Although many Orchids are resting at this season, there are others in active growth, especially amongst the Odontoglossums, and although these may exist at a temperature of 45°, they will not grow and develop the bulbs and spikes to the best advantage unless given every encouragement.

THE KITCHEN GARDEN.

By ALLAN FALCONER, Gardener to the CHEADLE ROYAL MENTAL HOSPITAL, Cheadle, Cheshire.

Cropping.—The sites for the vegetable crops should be marked out on a plan of the garden, and such plans are very useful for future reference, especially if marked in detail, with the quantities of lime, manure, and other materials used, dates of sowing and planting, and the amount of the crop. I know of nothing better than growing quantities of Rhubarb for forcing where an excess of Brassicas has occurred, because the dreaded finger and toe disease may be eliminated or reduced by the change. Rhubarb is a profitable crop, and brings the ground into good condition, especially if it has been over manured, and is inclined to be acid.

Cucumbers.—Where plenty of heat is available a start may be made by sowing seeds in pots or pans, the latter for preference. If the prepared soil is watered, as for Tomatos, the seeds sown at once, and the pans put in a glass-covered box placed on the hot-water-pipes, germination soon follows, and there is very little risk of the seeds rotting as compared with the method of sowing seeds singly in small pots. When germination takes place, remove the seedlings to a light position in a house where the temperature is kept above 65°; pot the seedlings into sixty-sized pots so soon as the rough leaf begins to show, the prepared soil being warmed beforehand.



The Seed Order.—So soon as the seed catalogues arrive, no time should be lost in making a selection of tried varieties, also a few novelties, and posting the order so quickly as possible. Too much importance cannot be attached to the question of "strain," especially by the exhibitor; but most seedsmen are fully alive to this important matter.

General.—Sow a small quantity of seeds of the Tom Thumb variety of Lettuce for early use. Place a few boxes of Mint in a warm house for early supplies, and put another batch of Rhubarb in the forcing house, where a temperature of 55° to 60° is maintained.

FRUITS UNDER GLASS.

By T. PATEMAN, Gardener to SIR CHARLES NALL-CAIN, Brocket Hall, Hertfordshire.

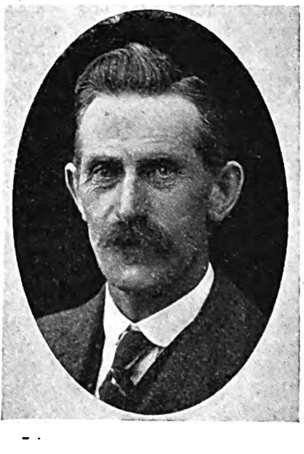
Introductory Remarks.—There is really no beginning or ending to the gardening year, but with the advent of the present month the careful cultivator becomes anxious to complete those details of work which often mean success in the cultivation of fruits under glass. This work will chiefly consist of cleansing the structures and their occupants, and renovating the borders, and it should receive immediate attention, always bearing in mind that cleanliness is one of the first steps to success. Review the work and results of the past year; if there have been failures, try to find out where mistakes have been made and by what means they may be avoided, for failures are sometimes due to circumstances which the grower can control.

Strawberries.—The majority of growers in private establishments generally start their first batch of Strawberries in the New Year. Where a whole house cannot be devoted to them there is nothing more suitable than a recently started Peach house. The low temperatures to which the Peach trees are subjected in their early stages of growth suit the development of Strawberries. Prior to placing the plants indoors, it will be wise to remove all dead and decaying foliage, and examine the drainage, which occasionally becomes blocked and thus prevents a free passage of water. Dislodge any worms that may be in the soil and make the drainage effectual. In the early stages of forcing, Strawberries should not be over-watered, as an excess of moisture at the roots may prove harmful, especially if the plants are not vigorous. Mildew is sometimes troublesome; to keep this in check, dip the foliage in a sulphur wash, which will also keep red spider in check.

PLANTS UNDER GLASS.

By J. COUTTS, Assistant Curator, Royal Gardens, Kew.

Introductory.—The beginning of the year witnesses the beginning of renewed activities in the plant houses, for with gradually increasing light one can safely commence the sowing of certain seeds as well as general propagation. It is wise, therefore, to have everything ready, thus any arrears in the way of house washing and general cleansing should be finished so soon as possible, for cleanliness is of prime importance in the successful cultivation of indoor plants. All wall surfaces should be thoroughly cleansed and afterwards lime-washed, adding a handful of flowers of sulphur to each bucketful of the wash; benches should be cleansed, and the covering material of gravel or cinder washed or renewed. The stages may also be soaked with a solution of carbolic acid, and this should certainly be done if eelworm has caused trouble during the past season. Propagating cases should also be thoroughly cleansed and new plunging material provided. Peat moss litter is excellent for this purpose, if it is broken up and passed through a sieve; it keeps clean and sweet for a long time, and is an excellent rooting-medium for many plants. Soil, and other potting material, in sufficient quantities, should be placed under cover.



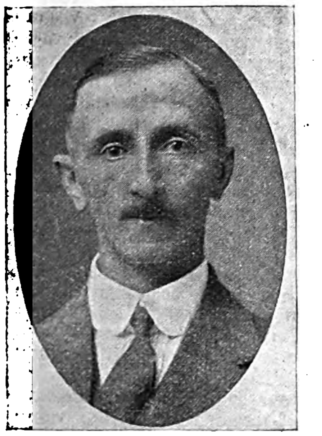
Seed Lists.—Orders for seeds should be made out and forwarded without delay. While each cultivator has to grow the subjects required by his employer, this should not prevent a gardener from experimenting with a few new subjects each year in the hope of finding a plant that may prove particularly useful.

Hints on Seed Sowing.—The compost used for seed sowing should, as a rule, be of a light, open character; the seeds should be covered to about their own depth with soil, while fine, dust-like seeds, such as those of Begonia, Calceolaria, Gloxinia, Rhododendron, Erica, etc., should be sown on the surface of the soil without any covering or, at most, a sprinkling of sand. For fine seeds of this description the seed pots or pans should be filled and watered several hours before seed-sowing takes place, and if it is necessary to afford water afterwards, stand the seed pans in a shallow vessel of water for a brief period. After sowing, cover the seed pans with a piece of glass and afford shade until germination takes place. Seeds with a hard testa, or seed coat, should be soaked for twelve or more hours in warm water, or the pots and soil may be soaked with boiling water after the seeds are sown; indeed, this often proves more effective than soaking the seeds in warm water. Thin sowing should be the rule, as this allows the seedlings a fair share of room, light and air, and damping off is avoided.

Seeds to be Sown during January.—Seeds of tuberous-rooted Begonias should be sown during this month, and the seedlings grown on steadily so that they may be useful for furnishing the conservatory towards the end of the summer. These make a good succession to the batches of plants grown from tubers. Some of the beautiful varieties of Begonia semperflorens deserve to be more generally grown for conservatory and greenhouse decoration, as they are very useful during the autumn, or even winter months, while plants may be raised either from seeds or cuttings to provide a spring display. Seeds of Gloxinias should also be sown now to ensure a display towards the end of the summer and autumn; at the same time, a batch of tubers raised from seeds sown last year should be started in a warm house. Streptocarpuses, raised from seeds sown last year, should be ready for repotting during this month, and seeds should be sown for successional batches.

HARDY FRUIT GARDEN.

By T. E. Tomalin, Gardener to the Earl of Bessborough, Stansted Park, Emsworth, Sussex.



Spraying.—This operation is undoubtedly of the first importance in the production of clean fruits; therefore, a few remarks on the subject at this season may be opportune. Although it may be thought wasteful to spray fruit trees before pruning has been completed, yet it is sometimes advisable, because it is so essential to seize the first opportunity afforded by a spell of calm weather, which, in our climate, does not often occur whilst the trees are dormant. It therefore becomes a choice between two evils, because it is more wasteful still to attempt spraying during windy weather. The new tar distillate washes, of which there are two or three reliable brands on the market, proved most effective in controlling insect pests on our trees last season. These sprays must be applied only whilst the trees are quite dormant, and at the various strengths specified for the different kinds of fruit trees. For clearing old, neglected trees of Moss and Lichen only, a caustic alkali spray is probably the most effective, or, where American blight is troublesome, a more effectual wash is caustic paraffin emulsion, made by emulsifying one gallon of paraffin in 1 lb. of soft soap, and adding the mixture to forty gallons of water in which 4 lbs. of caustic soda has been dissolved. In districts where Pears are regularly disfigured by scab or sooty fungus, lime-sulphur should be applied to the trees, at winter strength, in early February.

Birds and Buds.—Efforts should be made to prevent the destruction of fruit buds by bullfinches. These birds usually start on Prunus Pissardii at this season, and having stripped this ornamental Plum of its flower buds, they next attack the Damson. Plums and Pears are usually attacked in February, and Apples during the pink-bud stage, in April, especially the dessert varieties Beauty of Bath and Irish Peach. The bullfinch is one of the most destructive pests with which the fruit grower is plagued, and no effort should be spared to keep its numbers down, especially as it seems to offer no compensation as a means of reducing the attacks of insect pests.

THE FLOWER GARDEN.

By J. G. Weston, Gardener to the Duke of Devonshire, Chatsworth, Bakewell, Derbyshire.

Foreword.—When agreeing to write the weekly "Flower Garden" notes for 1928, I remembered that many years ago I wrote under a similar heading. I lived nearly two hundred miles south of the district from which I am now writing. I had heard a great deal of the difficulties of gardening in the midlands, but after the experience of three seasons—and certainly not good seasons—I have found little more than the average difficulties of adjusting one's plans to the change of site and district. I find that good gardening practice tells everywhere—in Kent, in Kilkenny and in Derbyshire—and that to be successful a gardener should lose no opportunity of carrying out garden operations as early as possible, according to the locality. Great good follows the early preparation of the soil, for when suitable weather arrives no time need be lost, and "doing the right thing at the right time" is, I am sure, a good march along the road to success.

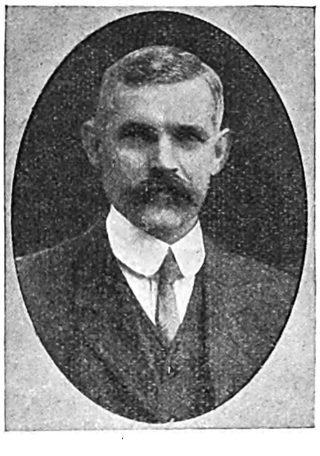
Recently Transplanted Shrubs.—The weather during the last three months has been unfavourable for the business of transplanting shrubs and trees, and in the majority of cases it is certain that planting in autumn is a great help towards ultimate success. In early autumn the ground still retains a certain amount of warmth, and root action starts quickly in most instances. At the present time, there is a great and increasing interest taken in the testing of many of the lesser-known flowering shrubs and trees, and I shall from time to time call attention to some of the novelties recently introduced. As a measure of precaution, and in connection with my observation concerning the advantages of autumn planting, I should state that with shrubs of doubtful hardiness—or even if of proved hardiness—that are very small and consequently of tender growth, planting should be deferred until the spring, and then extra attention and care should be given in order to get a new or rare plant thoroughly well-established during its first season.

Protection During Severe Weather.—Since the middle of December we have had two spells of severe frost with heavy falls of snow, with a mild spell sandwiched in between, therefore the protection of recently-planted shrubs, or those of doubtful hardiness, must not be overlooked. It is a mistake to unduly coddle such plants by over-protection, as this simply defeats the end in view by rendering the stems and branches tender and thus much more susceptible to injury by frost. It is better to leave them exposed during mild weather, and take immediate steps when severe weather is expected to afford such protection as is necessary for individual plants or batches of plants. One of the best methods of protection is Nature's protection—good dry leaves. By placing these amongst the plants and round the stems, with a few pieces of evergreen to keep them in position, much good may be done. Dry Bracken is another excellent protective material, and may be worked lightly amongst the branches. All protective material should be watched, and if necessity arises, should be increased or renewed. On the other hand, during spells of mild weather it should be removed or pulled on one side to allow plenty of air to circulate round the plants.

FOR NORTHERN GARDENERS.

By A. T. Harrison, Gardener to the Marquis of Ailsa, Culzean Castle, Maybole, Ayrshire.

Arrears of Work.—Owing to the severe spell of wintry weather experienced all over the British Isles, much of the regular work has been delayed, hence every opportunity must be taken advantage of to push forward the pruning of all fruit trees and bushes, so that the work may be completed in good time to allow the trees to be sprayed while the buds are dormant. It is a good plan to carry on digging or trenching operations concurrently, so that during the colder parts of the day the staff may be kept comfortably employed, and during the milder parts, or when the sun is shining, they will be profitably occupied with the lighter occupations of pruning or nailing. In the pleasure-grounds, leaves not already collected in the rougher parts should be raked into heaps and removed to the depots, where they will provide leaf-mould in course of time; or they may be carted to the frame ground and made up into large, flat heaps, to form the basis of hot-beds for forcing early vegetables under portable frames.



Seed-sowing.—It is too early to make sowings of many seeds, but where a moderate temperature of between 50° and 60° can be maintained, there are several kinds which amply repay early sowing. Onions, for exhibition, should be sown at an early date in the New Year; in fact, one well-known grower always made a point of sowing his Onion seeds on January 1, but as New Year's Day was on Sunday this year, I hope the difference of one day will not upset his run of success. Many beginners make the mistake of not covering the Onion seeds deeply enough, with the result that the seedlings work up to the surface of the soil and sprawl about; never cover the seeds with less than a quarter-of-an-inch of soil. Where early Tomatos are in demand, the young plants from former sowings should be kept growing steadily, while a further sowing made now will provide early plants for successional crops, but the main sowing should not be made yet. Last year, many growers experienced difficulty in raising early Tomato plants, and where this trouble was experienced it will be advantageous to partly sterilise the soil for the seed pans or boxes. One simple method is to fill up the required number of receptacles with soil, pour on sufficient boiling water to heat the soil thoroughly, then allow the pans to drain for twenty-four hours before sowing the seeds.

Perpetual Carnations.—The present is a most suitable time to commence the propagation of next winter's supply of flowering plants, and where plenty of cuttings are available they should be inserted without delay. If placed in sandy soil in a propagating case with a bottom heat of 65° they will soon take root. Carnations do not strike readily if the heel is left intact—as is so often recommended for cuttings of other plants—and in all cases this should be removed.

Cauliflowers.—Plants which were raised from seeds sown in August and placed in frames during October should be given plenty of air on all suitable occasions, by removing the sashes as by this means dwarf, sturdy plants are produced. The only time when the frames should be closed is when frost sets in, and then they should be protected by mats while severe frost lasts, but so soon as the weather is again open the coverings should be removed and air admitted.

ALPINE GARDEN.

ERODIUM CORSICUM.

Quite a number of Erodiums, or Heron's Bills, are obtainable by the grower of rock plants, and to select one from the number and say it is the best would be rather a hazardous undertaking. Happily, this task is not imposed upon me, and I can only speak of Erodium corsicum as one of the really desirable species of the genus. It is quite a satisfactory plant in the majority of rock gardens and also excellent for the moraine, and in either place it constitutes a pleasing subject, neat and bright, and appealing to most admirers of such plants. It is confined in nature to parts of Corsica and Sardinia, and may be cultivated with success in a sunny part of the rockwork or moraine, not too high up, so that one may look down upon its carpet of foliage and flowers and thus see them at their best.

S. corsicum creates a close mass of stems, with many small, glowing, rose-pink flowers, with deeper veining, and these look delightful on the downy, grey foliage. The Corsican Heron's Bill may be propagated by seeds or by side-stems, which should be removed in summer and struck under glass in sandy soil. I have known plants of E. corsicum suffer badly in specially wet winters, but a little overhead protection will be enough to prevent this. *S.*

CALCEOLARIA JOHN INNES.

A hybrid between Calceolaria plantaginea × C. polyrhiza, and intermediate in habit between the two species, C. John Innes is an excellent plant for a half-shaded, moist position in the rock garden, where, over a very long period, it produces its comparatively large, attractive, yellow flowers, speckled with dots of brownish-red.

The plant requires very little attention; it is extremely hardy, thriving well if given a cool root-run and not too much direct sunshine. I have seen it perfectly happy in the interstices of a paved walk, albeit somewhat dwarfed in growth. The blossoms, sometimes solitary and sometimes two or even three on a stem, are produced with the greatest profusion from May until early autumn. C. John Innes is easily propagated by division, and makes a very satisfactory plant.

PENTSTEMON CAMPANULATUS.

This Pentstemon, as collected, is variable, there being pink, violet and almost purple-flowered forms; the rosy-pink form is the one commonly met with in cultivation, and is a delightful little plant for massing in the rock garden. During this past summer and autumn, a generous mass at the base of a great natural outcrop of rock, has proved a source of delight, the rosy flowers harmonising perfectly with the weather-worn stone and providing a colourful and picturesque effect for several weeks. The small, lanceolate leaves are abundant, and the somewhat slender stems grow twelve inches to eighteen inches high.

Pentstemon campanulatus is figured in *Bot. Mag.*, t. 1,878, and 3,884, and is richly endowed with synonyms, *i.e.*, P. angustifolius, P. atropurpureus, P. pulchellus, Chelone atropurpurea, C. campanuloides and C. rosea.

A native of North-west America, this pretty species will thrive in any ordinarily good, well-drained loamy soil, in a sunny situation. Like most of its congeners, it is very easily propagated from cuttings, and a small stock should be kept in a cold frame to replace possible winter losses; it is also easily grown from seeds. *Ralph E. Arnold.*

CODONOPSIS OVATA.

The genus Codonopsis, belonging to the Natural Order Campanulaceae, is not, as a rule, a highly popular one in gardens. It comprises a few species, most of which have but little importance for the garden. Some, such as C. viridiflora, are of a climbing nature, but, as a general rule, they are of little or no importance as garden flowers. Of the few which have been introduced there is only one species to be met with in nurseries. This is C. ovata, and the best the writer has yet seen, and he has come across every one introduced to British gardens at one time or other. It cannot be stated with truth, however, that its attractions are such as to appeal to the lover of showy colouring. Yet it has attractions to the plant-lover, and he likes to study it, and to enjoy its points of beauty. It grows some nine inches high, and is of graceful habit. Its bell-shaped flowers droop gracefully. They are of a soft blue shade, and their full beauty is not apparent until they are lifted up so as to reveal the interior. This has pretty orange markings. The foliage is of a beautiful grey-green, quite velvet-like in texture. One peculiarity of C. ovata will not be appreciated. This is the odour of the flowers. Most people liken it to that of Coffee, and this rather favours the smell, which is not quite so pleasant to the olfactory organs as the popular beverage. C. ovata is excellent for light dry soil, and the rock garden would appear to be the most suitable place for its accommodation. *S. Arnott.*

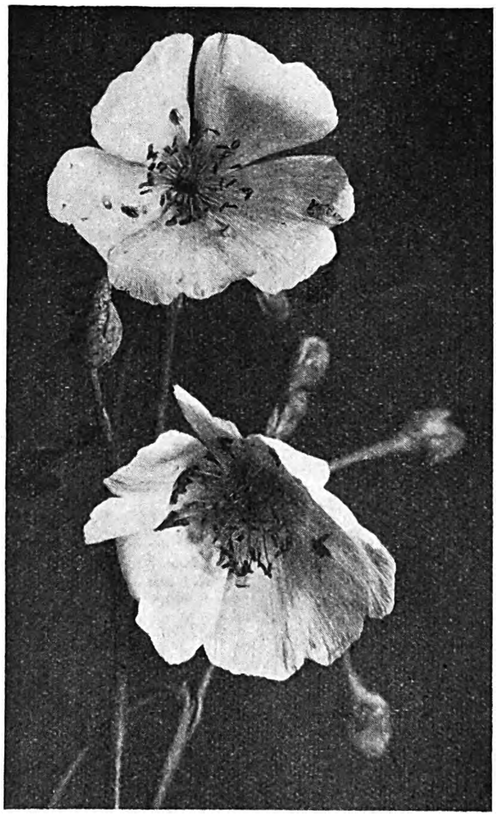


FIG. 2.—CALANDRINIA GRANDIFLORA.

FLOWER GARDEN.

CALANDRINIA GRANDIFLORA.

The Common Rock Purslane is not so popular a plant as formerly, but there seems to be no good reason for its fall from favour, except that it has not excited the attention of seedsmen in the way many other flowers have. Whether it is capable of "improvement" is another matter.

Calandrinia grandiflora is generally treated as a hardy annual, but certain authorities consider it perennial. It is a Chilian species, varying in height from a foot to three feet, but under average cultivation seldom exceeds eighteen inches. The leaves are fleshy, and the widely-expanded flowers (Fig. 2) are of a bright rose colour, sometimes with a purplish tint.

There are about sixty species of Calandrinia, mostly annuals, or may be treated as such, and several of these have been figured in the *Botanical Magazine*. Many of them appear to be worthy of more attention than they have received, particularly for cultivation in the hotter, drier parts of the garden.

PLANTS FOR POOLS.

For the adornment of pools which were lined with bricks and concrete, a trial of many subjects was undertaken. The plants were grown in tubs, pots and pans. During the summer the Japanese Irises gave the most pleasure, although doubts were expressed as to their suitability. These Irises were potted early in the spring in a compost of good loam and decayed cow-manure. The pots were plunged in moist soil on a sheltered border until the plants commenced to grow freely. Bricks were arranged to form piers in the pools and upon these the pots were placed. When in position, the pots were immersed in water to about one-third of their depth. Treated thus they grew and flowered freely, in full sunshine. A few plants of the yellow Flag, Iris Pseudacorus, and its variegated form were grouped in the same pool.

Acorus Calamus (Sweet Flag) was planted in large pots which were immersed just below the surface of the water. The variegated Sweet Flag formed a neat, grassy tuft when treated in the same way. Butomus umbellatus, when carrying its bushy heads of pinkish flowers, was very attractive under the same conditions. Plants of the Arum Lily, grouped in a sheltered corner during the summer, gave every satisfaction. The Porcupine Rush (Juncus zebrinus) is a plant which shows more variegation when grown in pots. Planted out in rich soil, the stems are seldom covered with the broad bands of creamy-white which makes this plant so attractive when its roots are confined in a pot. Typha latifolia (Reed Mace) is suitable for tubs in the larger pools. The more dainty Typha minima, which seldom exceeds two feet in height, is useful for small tanks. All the above plants, with the exception of the Japanese Irises, were arranged in groups, the pots and tubs being several inches under water. Clean shingle was placed over the surface of the soil.

In a large pool open to full sunshine, some of the fragrant Water Lilies were very attractive These grew very freely in tubs filled with loam, decayed cow-manure, and coarse sand.

Broad stone steps, several of which were under water, proved to be ideal places for arranging ornamental pans containing flowering plants. Myosotis palustris semperflorens (Water Forget-me-not) and several varieties of the Marsh Marigold, including the giant Caltha polypetala, with its handsome leaves and large clusters of flowers, formed an interesting group in the spring. The Myosotis was removed before growth became too rampant. Trollius europaeus and T. Orange Globe were quite a success on the higher steps, the pans standing in an inch or two of water. Lobelia cardinalis and some Spiraeas, notably S. Filipendula, planted in rather deep pans and placed on steps sheltered by a Yew hedge, were much admired. Funkia ovata aurea, planted in pans filled with rather heavy loam, grew well in full sunshine and also in the shade, provided the roots were moist. The large, soft-yellow leaves were very effective. *C. Ruse.*

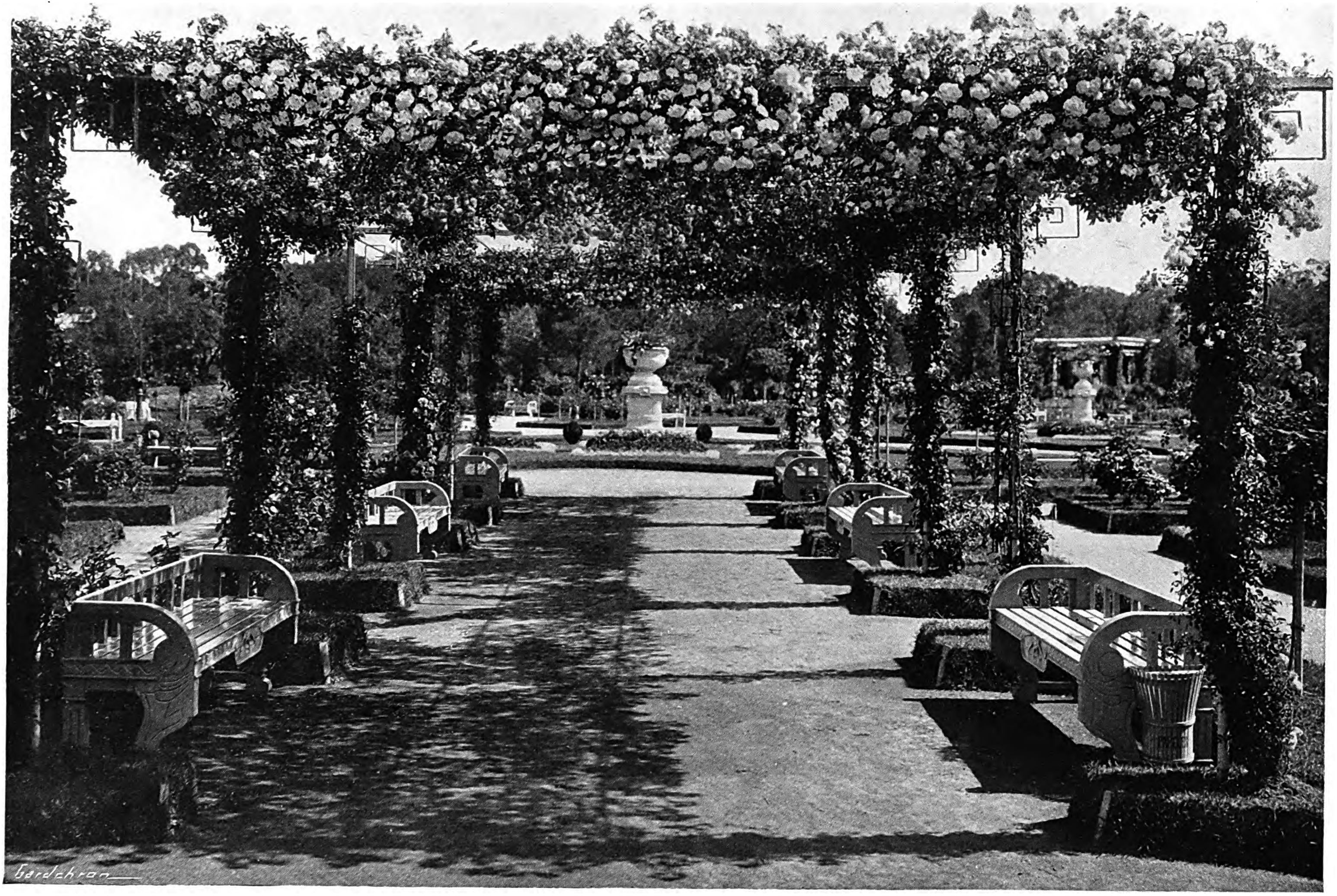
BOG GARDEN.

PRIMULA ROSEA.

During March, the rich, deep, rose-coloured flowers of this Himalayan species contribute largely to the attractions of a waterside garden, for it is in moist situations that Primula rosea revels, although it will make itself at home in somewhat drier situations.

Resting buds are formed during winter and these open in spring to disclose the brightly-coloured flowers an inch or two above the ground, but given a spell of mild weather, development is rapid, and finally the flower-stems attain a height of six or seven inches.

It is a simple matter to raise Primula rosea from seeds, or stock may be increased by dividing the crowns, which become overcrowded after the plants are left undisturbed for a long period. The soil for this Primula should contain a goodly proportion of decayed leaf-mould. *T. H. Everett.*



ROSEDALE GARDENS, BUENOS AIRES.

BULB GARDEN.

PUSCHKINIAS.

A beautiful, yet little known plant in the garden is Puschkinia scillioides, a charming, Scilla-like bulb which was named after the Russian botanist, M. Puschkin. It is admirably suited for the rock garden, but may also be employed with advantage for planting in groups near the front of the border of hardy flowers. Its popular name is the Striped Squill, and this gives a good indication of the general character of the flowers. This Puschkinia, which hails originally from the Caucasus, Asia Minor and adjacent parts, has small, tunicated bulbs, with deep green, canalled, rather lance-shaped leaves, and in April, as a rule, whitish or pearl-blue flowers striped with darker blue lines, on stems which vary from four to eight inches in height.

The only species recognised by botanists is P. scillioides, P. libanotica being either a synonym or a designation to mark a variety presenting little difference from the typical P. scillioides. A variety, generally sold as P. libanotica compacta, has a denser raceme of flowers. It has, perhaps, a little more effect, but what it gains in this it loses in grace. There is also a rare white variety of great charm.

Puschkinia scilloides is not at all difficult to cultivate. The bulbs, which are inexpensive, are procurable in autumn, and should be planted so soon as received in a well-dug, rich, light soil of sandy loam and leaf-mould or peat, at a depth of three or four inches. When only a few bulbs are planted it is well to search diligently for slugs, as they have a penchant for the Puschkinia just at the time it appears above the soil. The bulbs may be left in the ground for a few years and then lifted and replanted after removing the offsets for increase. *A.*

INDOOR PLANTS.

HIPPEASTRUMS.

Where a large number of these plants is grown a supply of flowers may be maintained for two or three months by judicious arrangement and forethought. Where an early start is to be made I would advise the grower to select a few of the best bulbs and thoroughly soak the soil and roots with water, afterwards removing part of the surface soil and adding some rich compost. During the removal of the surface soil, it will be wise to remove any loose scales and thoroughly examine the bulbs for insect pests. Mealy bugs appear to be very fond of Hippeastrums, and unless means are taken to destroy the pest, other plants may be infested therefrom. Arrange the plants over very mild bottom-heat, and until the flower spikes are in evidence, afford very little water at the roots, otherwise growth will be made instead of flowers. A moist atmosphere is desirable, and if it becomes at all dry the surroundings should be syringed with tepid water. *P.*

ORCHID NOTES AND GLEANINGS.

ONCIDIUM SANDERAE.

Belonging to the Papilio section of Oncidium, O. Sanderae remains a somewhat scarce species in cultivation, although introduced about 1910, during which year—on July 19—it was granted an Award of Merit by the Royal Horticultural Society's Orchid Committee. It has well-marked features, but appears to be closely allied to O. Kramerianum, from which it differs, however, in the absence of raised rings at the joints of the scapes and in having long, beard-like glands on each side of the column. The narrow dorsal sepal and petals are brown, the decurved, frilled lateral sepals being light yellow with reddish markings. The large labellum is curiously frilled or fringed, light yellow, with red markings within the margin and also on the side lobes.

This handsome Orchid (Fig. 3) was introduced by Messrs. Sanders, St. Albans, who first exhibited it on the date stated.

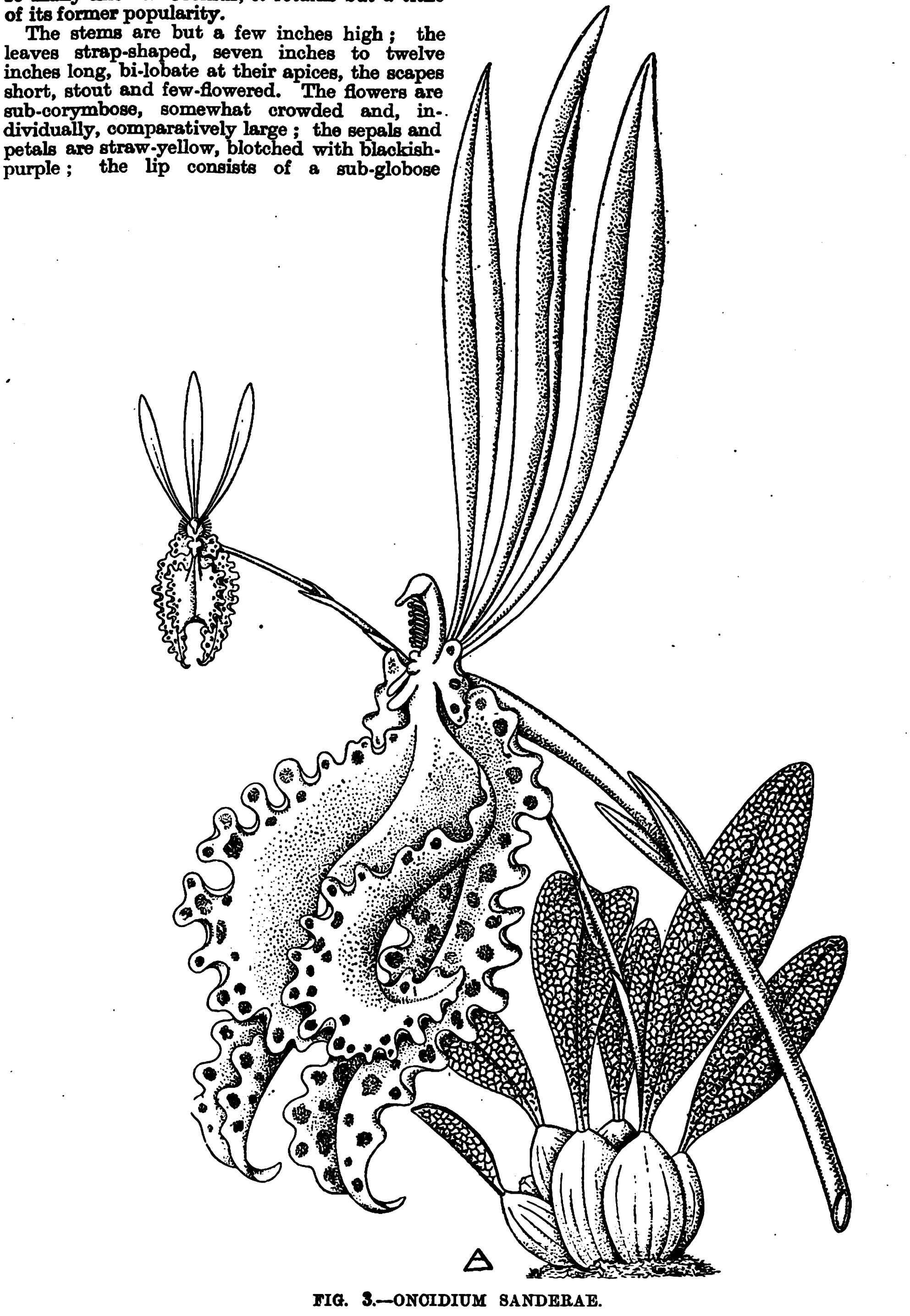


FIG. 3.—ONCIDIUM SANDERAE.

SACCOLABIUM BELLINUM.

This species, one of the finest of the genus, was once familiar in collections, but now, like so many fine old Orchids, it retains but a tithe of its former popularity.

The stems are but a few inches high; the leaves strap-shaped, seven inches to twelve inches long, bi-lobate at their apices, the scapes short, stout and few-flowered. The flowers are sub-corymbose, somewhat crowded and, individually, comparatively large; the sepals and petals are straw-yellow, blotched with blackish-purple; the lip consists of a sub-globose sac and a semi-lunate blade. The sac is large, white, with a few purple spots on the basal concave side, and a large, deep yellow, central blotch; the blade of the lip is spreading, fimbriated, two-lobed, pubescent above, white, with an orange-yellow disc, spotted with purple.

Saccolabium bellinum was discovered by Boxall, in Burmah, in 1873, and introduced to cultivation by Messrs. Low and Co.

The natural hybrid, S. bellino-bigibbum, strongly resembles S. bellinum in habit and in the shape of the lip; the flowers are smaller, the sepals and petals reddish-brown, yellowish at the margins, the petals displaying a yellow median line; the lip is white with some purple spotting; the sac is yellow in the basal area, and spotted with brown. This pretty hybrid is autumn-flowering, whereas S. bellinum usually flowers in spring, but occasionally at other seasons of the year.

S. bigibbum is a very dwarf plant, and its flowers are smaller than those of S. bellinum, the sepals and petals being pale yellow, and the lip creamy-white; it flowers in autumn. S. bigibbum was discovered by General Benson in Lower Burmah, and introduced to cultivation by Messrs. J. Veitch and Sons, in 1868.

These interesting Orchids may be grown in pots, pans or baskets, preferably one of the last two, and suspended near the roof-glass in the warm division; the receptacles should be half-filled with crocks, and the remainder with a mixture of fibre and Sphagnum-moss, with a surfacing of living moss. During the growing season, abundant moisture is necessary, and throughout the year a moist atmosphere is a necessity. *Ralph E. Arnold.*

TREES AND SHRUBS.

QUERCUS SUBER.

THIS evergreen Oak, with its thick, corky bark, is by no means a common tree in gardens. The leaves are from one to two inches long and from half-an-inch to one inch broad, ovate, oval, or oblong in shape, toothed, rarely entire. The upper surface is of a dark, shining green, being entirely glabrous, while the under side is covered with a greyish, velvety-felt. This felt is also very pronounced on the young shoots, these being entirely covered with it. The bark of this uncommon Oak forms the cork of commerce, so much in everyday use.

As an ornamental tree for gardens, Q. Suber is probably best adapted for the south, or milder, parts of the country. To those who contemplate planting uncommon trees, I would recommend this species, and suggest that planting is best done during May or June, when the plants are showing signs of growth, or it may be deferred until September.

The illustration (Fig. 1, p. 3) is of a fine specimen growing in the grounds at Pains Hill, Cobham, Surrey, where fine old specimens of various trees are to be seen. *R. F., Wisley.*

COTONEASTER SIMONSII.

IN the season just over, the demand for berried plants for indoor decoration is so urgent that one feels compelled to cast about for anything that will supplement the too frequent dearth of Holly.

As a shrub that will never fail to yield a profusion of beautiful berries through the depth of winter, I can recommend Cotoneaster Simonsii. It is deciduous, has a tendency to assume a vertical habit, and is remarkable for carrying a profusion of coral, oval-shaped fruits throughout the winter. It is not at all fastidious about situation ; it is a rapid grower, and bushes two feet high may be often found covered with handsome fruits ; for cutting, for all kinds of winter decoration, whether for a delicate vase, or for wreaths and festoons for churches, I think it has no equal. Its fruits are not borne, like those of the Holly, in a glomerated, sessile manner, but are produced in profusion on light, feathery sprays, and, owing to the absence of foliage, every berry is effective, standing out against the foliage and everything with which it may be associated, while the pliability of the branches renders it available where the Holly, owing to its rigidity, could not be used.

A vase of evergreens, with the berried sprays of this shrub added, is exquisite ; sprays also form a charming combination with Mistleto. In short, those who cultivate evergreens for Christmas decoration should grow this shrub by the score, as a few sprays would brighten the bunches of evergreens which find their way into almost every home at Christmastide. Well-grown plants in pots would be charming objects indoors, or even for the conservatory. Owing to the absence of foliage, isolated plants of this Cotoneaster have a somewhat nude look, therefore they should always be associated with other shrubs. Grown as standards, with their heads of berries elevated above other evergreens, C. Simonsii produces a fine effect. *James A. Paice.*

FLORISTS' FLOWERS.

NEW CHRYSANTHEMUMS.

THE following remarks are my own impressions of the Chrysanthemum novelties that have been exhibited at the Floral Committee meetings of the National Chrysanthemum Society since September 10 last ; or, rather, a selection from these, because all the varieties which gained distinction are not included. Just over thirty gained the First Class Certificate.

Starting with the early, outdoor sorts, Mayford Bronze provides blooms easily four inches across, of shapely and refined beauty, the florets being evenly placed in imbricated style. The colour is rich orange-bronze ; the plant does not open all its flowers at about the same time, but from August to October the branches extend quickly, and each perfects a useful flower, without thinning. Glow was much admired and considered a gain in the style of the well-known Almirante. The plant is stronger in growth and a month earlier to bloom. The colouring in the half-open stage is crimson, with gold tips ; the flower is upstanding and the leafage small. Gloria is rich yellow, having been obtained as a sport from the variety September Glory, and therefore similar, save in colour. Strangely, a seedling named Daffodil resembles it in shape and in colour. The latter is especially rich, while in substance as well as high quality it leaves most other outdoor varieties behind. The first blooms opened in September, and flowers continued until November.

Pearla produces strikingly beautiful blooms in October. The colouring, a pretty shade of mauve-pink, will at once appeal. Specimens about four inches across may be somewhat loose and shaggy in appearance as compared with most of the early-flowering kinds, but they are, nevertheless, of distinct merit. In introducing this variety, the raisers give a timely hint to market men to grow more pink flowers instead of such an abundance of white ones.

The flowers of Jack Robbins were big for an outdoor sort, full and shapely. The colour is dark orange-bronze. Quite different in build are the blooms of Torch, which are medium-sized and composed of wide, thick florets. This variety has an attractive appearance by reason of slight red suffusions on the light bronze ground ; it has a very upright stem and small leaves. In growing Pax, the raiser made a mistake in not selecting more of the earlier buds. From these, in September, really fine, big, deep flowers were obtained, and this early habit makes one think that growers will be able to get perfect blooms outside. The colour is lemon-white.

Albion is not an outdoor variety in the sense that those already named are, but is a market and cut bloom sort for greenhouse flowering. This is regarded as a great gain, and it is about the whitest of white Chrysanthemums. Its shapely blooms are borne with freedom, and they are notable for substance as well as good looks. A peculiarity of growth may be noted. The plant attains considerable height before what is known as the "break bud" appears ; it may be wise therefore to make the plant branch in an early stage by "stopping" it. Monument is mentioned here to draw attention to a good market variety, although it is not new. It is pure white, incurving, and of fine form from early buds ; later, it assumes a less noble appearance, but in any case, and at any period, the variety is excellent.

A style of bloom in request is the undisbudded spray, and especially so late in the season, therefore a pair of varieties that were exhibited in December should prove useful. These are Shoreham White Spray and Yellow Star, with double flowers.

Single-flowered forms have usually one fault for show purposes—they are somewhat late to bloom. Daphne develops flowers in October, and being pink in colour, it should be welcome. The three or four rows of florets are wide and thick. A superb Single is Gaiety, of perfectly rounded form, with four or more rows of florets. These have good substance and are chestnut-red with a distinct yellow ring round a small disc. The plant is excellent in growth. Mrs. E. Page will find admirers on account of its colour—yellow with chestnut shades as the points of the florets are reached. The shape of the bloom is excellent.

Coming to the large, show, Japanese sorts, a sign of the times may be that they are the last to be noticed. These varieties are popular, of course, yet they are grown in quantity by the numerous competitive exhibitors. Any variety, too, which does not develop its blooms during November is comparatively useless ; and so far as my observation goes, growers have little use in these days for "thin-petalled" varieties, for, however much space these cover, most of the leading cultivators regard them as being wanting in "weight." For this reason, one would be inclined to turn down several sorts honoured with awards recently. Mrs. F. C. Maples is a very fine yellow—deep and rich. The form is semi-incurving, and the wide, substantial florets build up a flower about nine inches deep and wide. Those who grow the old variety Mrs. M. Sargent will appreciate the new comer, for it is a seedling from, and very similar to it. The above remarks apply to Mrs. E. H. Pearce, of the same parentage, but greenish-white in colour, and, if anything, larger. Both are superb for their purpose when well-grown—as the blooms were when presented.

Jim Stacey is very promising. The shape is rounded, and the flower is composed of wide, thick, curling florets. This seems to me a clear yellow variety of great possibilities. So does Mrs. Keith Luxford ; there may be nothing distinct in the bronzy-chestnut shade, but the size is remarkable, and when this variety is in the hands of our leading competitors we may see notable examples.

In yellows, a variety named Southampton appealed as likely to be useful. It has long, drooping florets, and builds up a bloom something akin to the style found in Victory. Yellows, however, must be good to come within measurable distance of the new yellow form of Majestic, for this is surpassingly fine. *H. S.*

PLANTS FOR COLD SOILS.

IT not infrequently happens that the gardener finds himself confronted with the task of planting ground which, having a subsoil of clay, is cold and ill-drained. It may even be stagnant a foot beneath the surface, while the possibility of remedying the defect by drainage is distant. No matter how good and friable the top-soil may be, to attempt such plants as the moisture-loving Primulas, or the large-flowered Kaempfer Irises is hopeless. But there are many plants that will prosper under such conditions, and having given these a good trial, even in land with a "smelly" clayey subsoil, it has occurred to me that a note on the subject would be helpful to many readers similarly placed.

It is obvious, in the first place, that surface-rooters are mainly the subjects to grow. Among these are the herbaceous Spiraeas, but especially S. palmata and S. venusta (lobata) and their varieties, S. Ulmaria fl. pl., Astilbe Davidii, or A. grandis, and the Astilbe hybrids. Cimicifuga cordifolia and C. racemosa will both do well under such conditions, and their creamy-white plumes are extremely useful for associating with the rather ferocious colour of A. Davidii. The Rodgersias may be included for they thrive, with me, in ground that even Primula japonica could not withstand, and any of the hybrid Globe Flowers (Trollius) and other varieties of garden origin do equally well.

Put in as an experiment in a very water-logged bed, Phormium Cookianum, whose leaves do not exceed three feet in height, has grown most satisfactorily for many years. It flowers every season and has just endured over 20° of frost. Although the bigger Gunneras do not seem to enjoy such a cold base, G. magellanica is quite happy, and this makes a useful ever-green carpeting plant for covering the soil round about such subjects as the above-mentioned Phormium. Helonias bullata, which sends up purple spikes like those of a native Orchis, is also very contented with such ground.

The herbaceous Senecios have not all been successful. S. Veitchii does splendidly, rasing aloft its stalwart spires of yellow flowers to a height of five feet or six feet, but the more beautiful S. clivorum soon sickened. Lythrum Salicaria, in its several varieties, has done admirably, as have those elegant species L. virgatum and L. alatum. Podophyllum Emodii major is also among the successes and it is a plant of no small interest and beauty, quite apart from its merits as a foliage subject. Most of the more robust hybrid Mimuluses are prospering with the above, and I find that while these grow and flower well in a good, fairly damp soil, they are not nearly so troublesome when kept away from the water. M. Bartonianus, one of the most valuable and distinct of hybrid Mimuluses, I tried in an exceedingly cold, clayey soil, and it has succeeded surprisingly. In fact, these plants, put in as surplus, just to fill up, have proved the best of all.

A good many Irises will, of course, thrive under such conditions as I have described, notably I. versicolor, I. graminea, I. Monnieri and I. Delavayi, although the last does not always flower so well as one would wish. But the most satisfactory of the genus in this particularly uncongenial soil is undoubtedly I. sibirica. In all its forms—a dozen, or more—it is in every way admirable. There are scarcely any plants in the garden which receive less attention than these groups of the Siberian Irises. Yet they carry-on, year after year, producing sheaves of blossom, and their luxuriant foliage very effectively smothers all weeds. *A. T. Johnson.*

THE CHINESE SWAMP CYPRESS, GLYPTOSTROBUS.

A PAPER* which I published in May, 1926, on the Swamp Cypresses, Glyptostrobus of China and Taxodium of North America, requires a few corrections and additions.

Glyptostrobus was widely spread over the northern hemisphere during the Tertiary period, its fossil remains having been found so far north as Greenland, Alaska and Siberia, and extending southwards to eastern Europe and the United States. The fossil distribution is not very different from that of Ginkgo, as is well seen in the maps of the two genera published by Professor E. W. Berry in the *American Journal of Botany*, XI, 550,551 (November, 1924).

Glyptostrobus also resembles Ginkgo in being, at the present epoch, represented by one living species, G. pensilis, which is unknown in the wild state. It is cultivated in three limited areas in China. Two of these, not far distant from Canton and Foochow, are well-known; but recently Professor H. H. Hu, of Nanking, has sent me a specimen in fruit from a third area of cultivation situated in the Kiangsi province in the Yuan-Shan district.

The photograph reproduced in Fig. 4 shows the manner in which the trees are planted in lines on the margins of Rice fields or on the banks of canals.

With regard to the cultivation of Glyptostrobus in these islands, it seems to be much less hardy than Taxodium; and the only adult tree which I have seen in the open air is one at Nymans, Sussex, which is less than twenty feet high. The Hon. Vicary Gibbs, in a note in *Qr. Journal of Forestry*, XX, 333 (1926), mentions several young trees as growing in the open at Wakehurst in Sussex; Bayfordbury; Aldenham, Hertfordshire; and Exbury, Hampshire. I made enquiries which show that this is not quite correct. The tree at Aldenham, about fifteen years planted, survived zero temperature in 1917 and 1926; but it was in the latter year only four feet high and had on various occasions been injured by frost and the leading shoot killed. A younger tree at Bayfordbury, four feet high, bore 28° of frost without injury in the winter of 1922-23, but it is protected by Ferns during winter, and has only been planted out four years. Mr. Gerald Loder wrote to me a year ago that the Glyptostrobus at Wakehurst, reported to be hardy, has never been planted out, and is kept indoors in a pot during winter. There is a young tree at Exbury on the Solent, planted out in 1923, which withstood 17° of frost in the winter of 1925-26 without any protection. It is in a sheltered position in a wood, and was about five feet high and thriving when I saw it in July last. It is apparent from these facts that there is not adequate evidence to prove that the tree is really hardy.

The two older trees, reported by Mr. Gibbs to be growing at Sheffield Park, Sussex, which I saw two years ago, are undoubtedly the peculiar form of the American Swamp Cypress, which is now known as Taxodium ascendens, and were planted by Mr. Soames about fifteen years ago. He assured me that there was no specimen of Glyptostrobus in his grounds; and that the two trees in question were the ones wrongly identified by Mr. Gibbs.

Glyptostrobus appears to be unknown in the living state out-of-doors on the continent. Mayr, *Fremd. Waldbäume*, p. 290 (1906), reproduces a photograph of a supposed Glyptostrobus tree thirty-one years old, growing in the park of the Duke von Ratibor, at Grafenegg in Austria. This fine tree, which was of considerable girth and thirty-two feet high in 1906, is still living, but branches which I have received show it to be Taxodium ascendens. There is no Glyptostrobus growing at Grafenegg; but besides the tree mentioned, there are two trees of ordinary Taxodium distichum. Apparently, as I gather from a letter which I received lately from Graf v. Schwerin, the mistake is continually made in Germany, of identifying Taxodium ascendens as the Chinese Swamp Cypress. The latter does not grow in the open air in Germany.

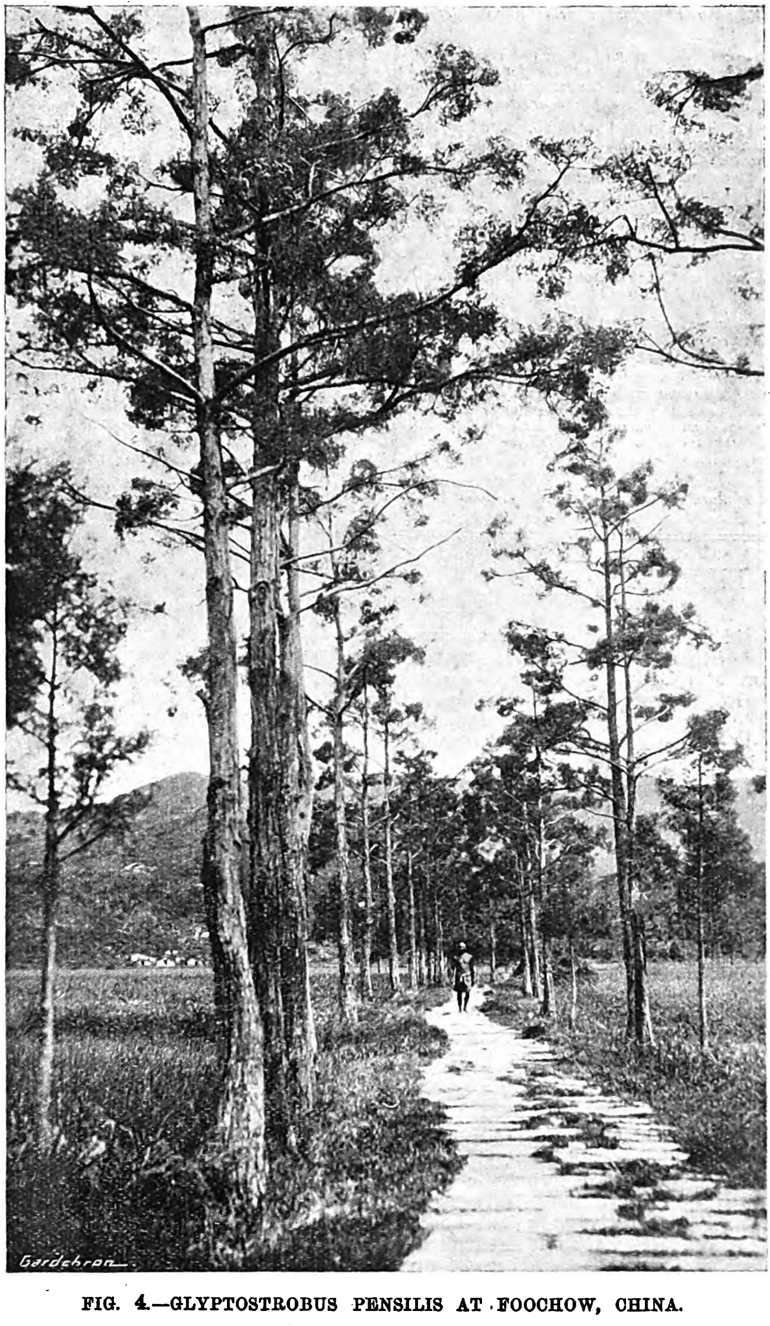


FIG. 4.—GLYPTOSTROBUS PENSILIS AT FOOCHOW, CHINA.

From a photograph taken by Prof. H. H. Chung, of the Amoy University, in the summer of 1924.

The two genera are readily distinguishable by the characters of the twigs, leaves, flowers, cones and seeds, as I have explained in great detail in the paper cited above. I may mention here as a ready means of diagnosis that the perennial branchlets in Glyptostrobus remain green for several years, showing lines of white stomatic dots on the surface, plainly visible with a lens. In Taxodium, the branchlets become brown and corky in the second year and are devoid of the white stomatic dots. The leaves of Taxodium have a median furrow on their upper surface, which is absent in the leaves of Glyptostrobus.

Glyptostrobus may be useful for planting in sub-tropical countries, where it will thrive in marshy soils, unsuitable for other species, and will prove valuable for binding loose and treacherous soils, such as occur on the banks of rivers and irrigation canals. I have pointed out in *Trans. R. Scott. Arb. Soc.*, XL., 105-107 (October, 1926), the desirability of making plantations of Swamp Cypress on unproductive marshy land, Glyptostrobus being chosen where the climate is sub-tropical and Taxodium in the warm temperate zone. *A. Henry.*

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*In *Proc. R. Irish Academy*, 37B, 90-116 (1926).

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LILIES IN 1927.

SO many-sided is our climate that in the annals of Lilies of this century there is no record of a season at all comparable to that of the year just ended. There have been wet seasons and dry—the former far more numerous than the latter—hot seasons and cold, and combinations of each, but not one in which the southern summer has been so consistently wet, sunless and depressing.

Although the winter of 1926-27 passed without any hard weather worth noting, the floral year was slow to begin, and although a late spring is a common feature of our climate, the fact that in the Home Counties Forsythia delayed the opening of its flowers until the third week in March and Snowdrops were still in bloom when garden Crocuses began to open, is some measure of its lateness. January and February saw but few of those genial days when winter-worn humanity finds life worth living and plants are spurred on to their undoing; nor, until after St. Patrick's Day, were there any spells of weather soft enough to remember.

Although tedious enough, a backward spring is usually of good augury, for reasons which farmers and gardeners appreciate, but nine months ago gardeners learned to their dismay that though winter's tail may be prolonged into May it still has sufficient vitality to spread ruin over the land. It will be a long time before the killing frosts of April 27—May 1 are forgotten, for although by that time vegetation should surely have been acclimatised to cold weather, it was mercilessly checked by night temperatures, which, in some places seem to have fallen to 16°F., although the average fall was probably much less.

As always happens, the effect of those five black nights varied in different places, and some escaped entirely; but in many southern gardens the young growth of the common Laurel was killed and even stinging Nettles hung their heads. At Kew Gardens the leaves of Davidia Vilmoriniana, which is not a precocious species, were like brown paper, and there, as well as in other places, the new shoots of Rhododendrons were blackened to a deplorable extent. Old plants of Fuchsia Riccartoni looked quite dead at the time, but, as afterwards appeared, they had only been crippled.

A good deal was to be gleaned from the effect of the frost on Lilies, which at that time were all in active growth. In exposed places several species were cut down wholesale, and as was only to be expected, L. Hansonii paid dearly for its precocity. This species needs very careful placing and sheltering if it is to survive our average spring climate unharmed. Overhead shelter is essential to it in the early months of the year, and as this Lily again profits by shelter from the sun when it is in bloom in June, there should not be any insuperable difficulty in combining both; in not many Japanese species are the cultural indications so clear.

The effect of frost on L. Hansonii is no new discovery, but although previous experience should have prepared observant gardeners for something of the sort, the general collapse of L. regale will have come to many gardeners as an unpleasant surprise. The frosts of last April-end were curiously selective in their effect on this Lily, leaving specimens here and there serene and unharmed, while severely crippling adjacent plants.

No doubt there are physiological explanations of phenomena of this nature, which must come under the observation of gardeners at such times, and those who think about it will probably have their own theories on the subject. The fact remains, however, that no entirely convincing explanation is to hand of the natural causes which operate to leave, shall we say, one plant of a group untouched by frost while the rest of the group are crippled. It is not to be lightly dismissed as centring on the health of individual plants, because a vigorous, healthy condition clearly affords no immunity. The phenomenon is not, of course, confined to Lilies, and in the memorable débâcle of last spring, instances were probably to be found in every garden. I remember wondering why the centre plant of a clump of five Eucryphia pinnatifolia should have been struck by the frost while the other four had not turned a hair.

There was nothing selective about the effect of the frost on L. Henryi, which entirely belied its reputation as a tough species, and for the first time in twenty-seven years, was seriously injured. For the second time in the same period, too, L. giganteum was stripped of its larger leaves—sure measure of the extent of the trial. In the south, the Formosan form of L. philippinense was damaged, and although that was probably inevitable, the escape of L. centifolium was certainly a surprise. A slight browning of the edges of the leaves was doubtless a sign that this Lily had nearly reached the limit of its resistance, but the fact that those limits were not reached by a frost which caused such widespread havoc, is something to the good. The European Lilies were undamaged, and so were L. auratum and, singular to relate, L. Sargentiae, a species not usually reckoned tougher than L. regale. Although growing in beds adjacent to those in which L. regale was crippled, neither L. Willmottiae nor L. Davidii was ruffled. Just as easily propagated as L. regale, as quick to reach maturity, and as easy to manage, these two fine species are unaccountably slow to find their way into gardens. They are less showy than the other, but well worth having.

The fact that L. regale did not pass the exceptionally severe test with flying colours, is hardly likely to affect the place it is so generally earning for itself as a first rate general purpose Lily. The happy response of the plant to cultivation under field conditions has opened the eyes of trade growers to its possibilities, and so soon as the supply overtakes the demand, the price should fall to a point within the reach of all. Some day L. regale should be a serious rival to L. longiflorum as a florists' Lily, and for pot work it has a great advantage over that Lily, in that second season bulbs are better than first season. Nurserymen who grow L. longiflorum for market from imported bulbs, systematically discard the latter after they have flowered, because they are not reliable in the following year.

As so often happens, the catastrophe was followed by a spell of delightful weather in early May, but the hurt was more than skin deep and recovery was not helped by a five weeks' drought which was only broken temporarily in the last week of May, and delayed the flowering of the Thorns until then. The north-east winds, which are so common a feature of our vernal climate, did not dominate the country until the middle of May, and by then they had lost some of their earlier keenness and were tempered by the sun which was so much more in evidence than usual in March, April, May and the beginning of June. No doubt the dry weather accounted for the marked absence of Botrytis, for the fungus is powerless to enter the leaves of Lilies except when they are wet. Not until later on in the season, when leaden skies displaced the dry and sunny though crisp weather of May and June, were the ravages of Botrytis noticeable.

In the Home Counties the first of the Lilies is almost invariably to be found in bloom in the opening week of June, but what with the frost of five weeks before that and the prevailing drought, it was not to be expected that the customary time-table would hold good. For the same reasons, no doubt, the flowering of the early group was erratic, and although, as ever, the Pyrenean Lily retained pride of place in the second week of the month, the customary sequence of flowering was upset. L. Szovitsianum, for example, followed quickly on the heels of L. pyrenaicum and was only a little in advance of the Dutch-raised L. umbellatum, the origin of which is unknown, although it seems obvious enough. It is probably a hybrid between L. croceum and L. davuricum, or one of the many varieties of the latter, and as these intercross readily, there should be no great difficulty in establishing the parentage of this most useful garden Lily. L. Hansonii, which had suffered so grievous a check a few weeks before, and is usually in bloom with L. pyrenaicum, was much later this year, and in common with L. regale, L. Henryi and others, was stunted in growth. On the whole, however, the early-flowering group emerged tolerably well from a severe trial, and under the revivifying rays of the generous sunshine of May many cripples made astonishing recovery.

The casualities, however, were sufficiently numerous to induce many correspondents to seek advice as to the appropriate procedure in the case of Lilies damaged beyond recovery. It seemed to be generally thought that death of the bulb would ensue from a frost-stricken stem or that the cutting down of such stems in the pursuit of tidiness would also lead to fatal results. The origin of such beliefs is obscure but they are widely held and on a par with the commonly accepted notion that if the stem of a growing Lily is broken or seriously injured, the bulb will die. In truth, the very opposite is the case, for if, as often happens, growing stems of Lilies are broken, the effect is to hearten the bulbs, not to weaken them. The point has been so often demonstrated both by accident and intention as to be beyond doubt.

In country gardens where Lilies are grown on any large scale, accidents must inevitably happen to a stem now and again, and hares, rabbits and pursuing dogs generally have to be reckoned with, to say nothing of slugs. The accidental breaking of a record stem of L. centifolium, for example, may well bring tears to the keen amateur's eyes, but he may console himself with the comforting thought that in the following year there will probably be two stems in place of one. Some years ago, I intentionally cut down the stem of a bulb of L. Hansonii for five years in succession. At the end of the time there were five flowering stems instead of one, and a nest of bulbs from which I took thirty-three of all sizes. I recollect, too, that the year after a discriminating donkey had browsed on a bed of the Tiger Lily, it was a thicket of flowering stems.

The passing of June is usually concomitant with the flowering of the first of the mid-season group, which includes the North American Lilies and most of the Chinese species, but in 1927 the summer ended when July came in, with the result that generally, and with the inevitable exceptions, the conditions in the south for both the July and August Lilies were most unfavourable. That they should have come so well through the ordeal of a wet and sunless summer is probably due more to the brilliant sunshine of March, April and May and to the comparative dryness of the ground when the rains began at the end of June, than to anything else. In previous years the heartening effect on Lilies of a few weeks of sunshine in a dull season has been so marked as to call for notice.

Once August has passed there is but little left above ground to interest Lily growers except the seed harvest, for by that time only L. philippinense var. formosanum and L. sulphureum are still to come, with perhaps a few belated plants of L. speciosum. The first had very little chance in the south this year and L. sulphureum can only do itself justice as an outdoor plant in a benign autumn. Except in favourable places, it is really no more a garden Lily than is L. nepalense or L. philippinense.

The beginning of September brought a welcome respite from the persistent rains of July and August, but the interval was brief and on September 14-15 as much rain fell in twenty-four hours as normally falls in the month. With October came definite relief and welcome sunshine which may, perhaps, have had some slight effect in counteracting the evil effect on Lily bulbs of months of wet and sunless weather. But assuming that our conception of the process is correct, there can be few southern places where the bulbs of early and mid-season Lilies will have been matured, and to that extent the outlook for 1928 is none too favourable.

During the past year, a welcome addition has been made to the list of known Lilies in Mr. Kingdon Ward's No. 6,034, of which he wrote so enthusiastically in *The Gardeners' Chronicle.**

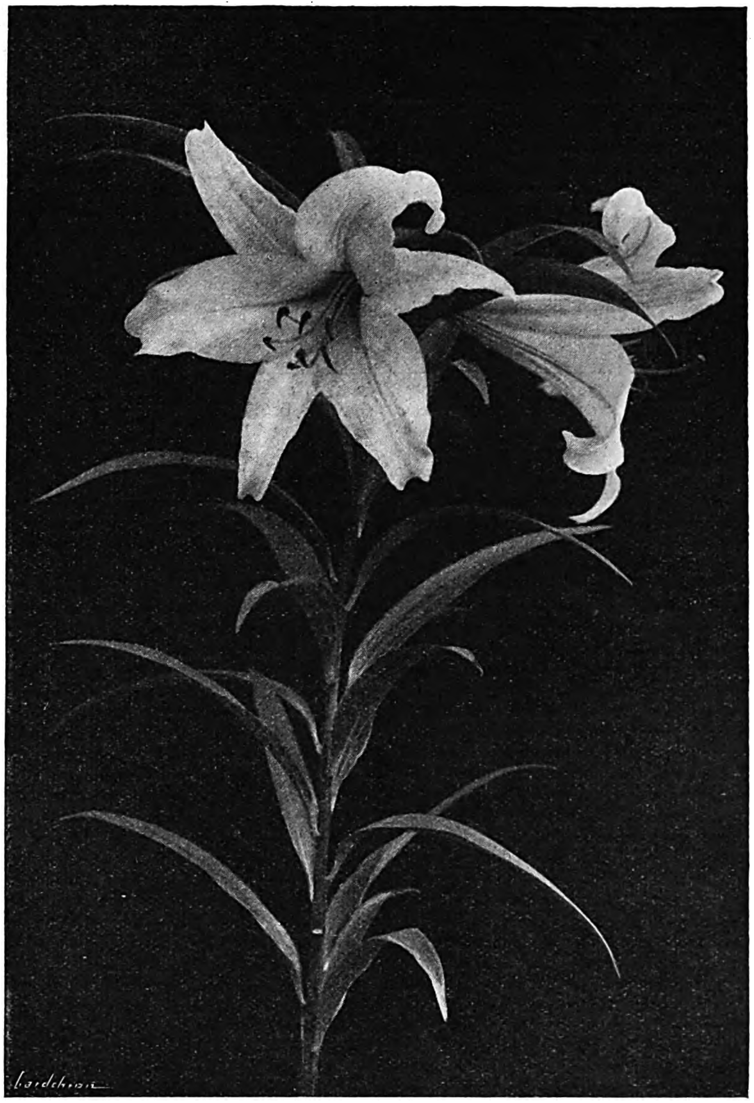

FIG. 6.—LILIUM ALEXANDRAE.

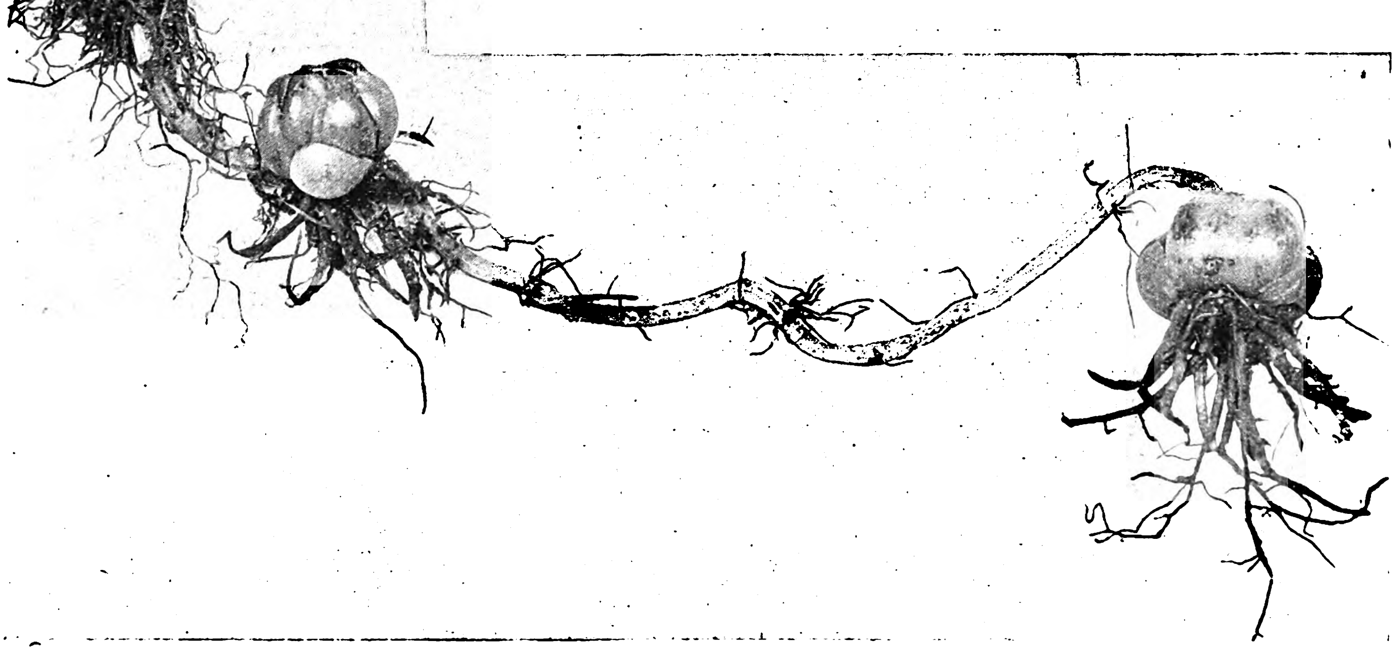

FIG. 5.—CREEPING STEM OF LILIUM TALIENSE (?).

A juvenile flowering specimen was first shown by the Hon. H. McLaren at Vincent Square on June 8, and excited much interest. Later on, specimens—also immature—were shown at the R.H.S. meeting on August 3 by Lt.-Col. Messel who has a number of plants growing in his garden at Nymans; and while there were obvious differences between the Bodnant plant and those from Nymans, they were not more marked than the differences between individual specimens of the latter. In each case the seeds were sown in the spring of 1925, so that the plants were but little more than two years old. Though evidently of rapid growth, it will probably be another two years before the oldest plants now in cultivation reach maturity, and students of the genus must exercise their patience until then. Wild plants are from two to four feet high, with from twelve to twenty blooms, and no great stretch of the imagination is needed to picture this Lily as a first rate garden plant. The habit of the plant and especially the carriage of the flowers on long pedicels, with foliaceous bracts, is curiously reminiscent of L. Henryi in miniature, and though the size of the bulb, among other points, precludes the likelihood of this Lily ever reaching the proportions of L. Henryi, it may well develop into a floriferous garden plant acceptable to all by reason of its lovely colour and delicious fragrance.

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* March 27, 1926, p. 232.—"Were I a sporting man, I would certainly put half-a-crown each way on the pink Martagon (K.W. 6,034). In size, colour, fragrance and general robustness it looks a thoroughbred, and at its best it is certainly one of the most splendid of its kind—far finer, in my opinion, than L. Duchartrei. Though unaccustomed to high altitudes, it ought to prove quite as hardy as any other eastern Lily, not one of which comes from a high altitude."

The Lily has been tentatively and informally attached to L. taliense, which is not, apparently, in cultivation here, but it is probably more nearly akin to L. Duchartrei; whatever the botanists make of it, however, the plant is new to cultivators, and Mr. Kingdon Ward is to be congratulated on his introduction of it. Flowering plants have already been figured in *The Gardeners' Chronicle*[*] and the illustration (Fig. 5)[†] shows the curious creeping habit of the stem.

There can be few living growers of Lilies who have seen or handled L. Beerensi, a hybrid between L. testaceum and one of its reputed parents, L. chalcedonicum. Named after the individual who first made the cross, the Lily came into notice in 1895[‡], and like so many hybrid Lilies, eventually died out. It has been revived, however, by Major L. Johnston's gardener at Hidcote Manor, where I saw specimens of it at the end of last July. The plant bears clear signs of its hybrid character " on its face," as it were, and if it can be kept going by scale propagation, should be a decided acquisition.

The Lily called L. Alexandrae has always been something of a mystery to those who do not look deeply below the surface of things, and when it was first shown here in 1893, even the Lily experts of the day were puzzled. To those who know their Lilies, the admirable photograph of the plant (Fig. 6) which was kindly taken for me in 1926 by Messrs. R. W. Wallace and Co., from a specimen growing in their nursery at Tunbridge Wells, is sufficient explanation of the doubts J. G. Baker has to the relationship of the Lily and his determination of it as a form of L. japonicum.[§] The general habit of the plant, the character of the leaf, and above all, the claw by which it is attached to the stem, are peculiarly reminiscent of L. japonicum. L. Alexandrae is really the Ukeyuri or Upright Lily of the Japanese, and has been known to them for centuries. It is a wild plant of the Loochoo Islands, and derives its conventional name from its habit of sometimes throwing upright flowers, a peculiarity it shares with L. auratum and other species. The Lily was unknown here till Messrs. Veitch and Messrs. Wallace exhibited flowering specimens of it simultaneously at the R.H.S. show at Chiswick on July 11, 1893, as L. Ukeyuri and L. Alexandrae, respectively. Messrs. Wallace named the plant in compliment to the gracious lady who was then Princess of Wales, and since then the name has been retained.

The elegant port of this fine variety of L. longiflorum is well shown in the photograph of a pot-grown specimen (Fig. 6) which might readily be mistaken for a picture of the white-flowered form of L. japonicum. Not naturally robust, L. Alexandrae seems too delicate a Lily for regular cultivation as a garden plant; at any rate, no cultivator seems to have kept it alive for long out-of-doors, though it does not follow that none ever will, for the type of L. longiflorum, which also comes from the Loochoo Islands, has proved an excellent garden Lily in the south. Probably, like L. japonicum, L. Alexandrae will always be seen at its best in a cold house, where in the wet summers of the last few years many of the less robust Lilies have been seen to better effect than in gardens.

It is so long since L. primulinum has been seen in this country that the news of its appearance at Vincent Square on November 15 naturally aroused hopes which, however, were blighted at finding that the specimen was a fine form of L. ochraceum. The petals of L. primulinum are lemon-tinted, and the flower has none of the dark colouring of L. nepalense or L. ochraceum, each of which is sometimes so heavily suffused with black-purple colouring as to be almost ugly.

In southern England the weather was all against the seed harvest, though the change in October came just in time to save the fruit of a few of the later Lilies from a watery grave. Generally, however, the seeds can hardly have been thoroughly ripened, and as a result, germination is not likely to be up to the average. There is a world of difference in the rate and ratio of germination of Lily seeds in a hot autumn and a dull, wet one.

During the year, Dr. Augustine Henry has been kind enough to tell me of his interesting find of L. croceum and L. bulbiferum growing wild in the French Alps,[*] where, among other localities, he found the former Lily common enough in open forest glades at about 4,500 feet in the valley leading up to the Pelvoux Massif. The veteran explorer regards this Lily as identical with the common Orange Lily of Ireland, except that the stems of the wild plants have a creeping habit. The bulbs are small, and are so deep down in the soil, so closely packed with stones and gravel, as to be difficult of removal.

Dr. Henry saw L. bulbiferum in the Engadine in much the same kind of situation and elevation as L. croceum in France, and noticed wild plants both with and without bulbils. The specific position of bulbils as a character in Lilium has been considerably shaken of late years, and Dr. Henry's interesting observation seems to lessen the value of the character still further. Certain Swiss botanists have disposed of the point by making the plant which has no bulbils a variety of the type, and it should be a simple matter to dispose of the question by raising the variety from seeds. If seedlings come consistently without bulbils, there is an end of the matter. There does not seem any reasonable ground for the view which is held by many continental botanists that L. croceum is merely a variety of L. bulbiferum. If relationship must be sought, it will probably be sought more profitably with L. davuricum. L. croceum has been raised from seeds often enough, and so far as I am aware, nothing like L. bulbiferum has been found among the seedlings. In these matters an ounce of practice is worth a deal of theory and many a theory and much discussed point in the diagnosis of Lilium can be settled by the simple test of prolonged seminal propagation. *A. Grove.*

CHILI AND THE ANDES.

V.—On the Way.

We arrived at Arica early in the morning, three days after leaving Lima. A rank, pungent stench pervaded the ship, wafted from a low-lying guano island, black with sea birds, a couple of miles away. The guano birds were leaving for business, flying to their fishing grounds far away out to sea. They flew rapidly, low over the water, in a dense, steady stream half-a-mile wide, and the procession took over four hours to pass. They must have numbered millions. The majority of them were like a small black duck, with now and then a leisurely company of ten or a dozen pelicans, looking for all the world like senior partners strolling to catch the 9.15, whilst the less exalted " black coats " hurried on for the 8.10.

On going ashore we found that the train to Tacna—which we had planned to visit—had just left. We decided, therefore, to explore the Azapa Valley, which runs inland from Arica, a ribbon of green fertility, a mile or so wide, set in desert hills, and watered by one of those occasional streams which come down from the Andean snows.

The car which we secured for this little expedition turned out to be uncommonly fast and powerful, but the mind of the young native driver was distressingly slow-working and indecisive. The first few miles lay across almost trackless desert, and the journey developed into a high speed obstacle race, as we swooped and sand-skidded to avoid rocks. The track forked, our driver's mind wobbled, and a head-on collision with a good, stout tree saved us from toppling into a deep river bed. This little incident and the incredible roughness and difficulty of the rest of our route had a sobering effect on the chauffeur's style. We wound mile after mile up the fertile, cultivated floor of the valley, stopping constantly to examine wayside plants. Now and then, we made small raids on waterless, uncultivated tracts, land too rocky or too poor to be worth irrigating, but extremely interesting botanically. Here grew great quantities of a handsome Bignoniaceous shrub, six to eight feet high, with heads of orange, tubular flowers. A large, dull-coloured humming bird was visiting the blossoms, hovering to suck the honey, and no doubt, incidentally, distributing pollen, but insects had destroyed every ripe seed. In poor, sandy ground grew a Solanum (C.E. 3), woody at the base, half trailing in habit, two to three feet high, and with heads of handsome, Potato-like flowers of a clear, pure, golden colour. Ripe seeds were scarce, but I secured a few, and it may perhaps make a good garden plant, although I fear English soil and climate may cause it to run to leaf at the expense of flowers. Although perennial, it will almost certainly not be hardy. The best chance with it would, I think, be to raise it annually like a Tomato, and plant it out for the summer in the hottest place and poorest soil possible.

The valley is sub-tropical, growing such crops as Cotton, Sugar-cane, Olives, Custard Apples, Almonds and Figs. The cultivated area is all under irrigation, but the methods of cultivation are extraordinarily rough and primitive, yet, thanks to rampant fertility, the crops looked surprisingly good. In one piece of orchard land, so wild a jungle of weeds that it seemed to have been abandoned, we made two interesting discoveries—a fastigiate Willow with the perfectly erect habit of a Lombardy Poplar, and a Sweet Pea (Lathyrus odoratus), purple-flowered, and so small and wiry and intensely fragrant that it might almost have been the wild type—the Lathyrus odoratus of Sicily, unaltered and unimproved. Certainly it is like the Sweet Peas which our great grandmothers grew. I possess an eighteenth century drawing of Sweet Peas—a purple and a pink and white, of just this little, old-fashioned type, and have long wished to obtain seeds of it, and here, in an abandoned garden on the Peruvian-Chilian border, I found it! By great good luck, after careful searching, I found two sound pods of seeds, still hanging on a dead, last year's plant. The Willow, I find, is a fastigiate form of Salix Humboldtiana, a wild Chilian species. I have since seen a good deal of this fine species in both its forms, and shall have more to write about it later. I took cuttings of this first specimen in the Azapa Valley, and having rooted them in a garden in Valparaiso, hope to bring them home with me.

Almost the last thing we saw as we returned down the valley was really astonishing—a farm-house painted an intense, dazzling, Rickett's blue, and heaped and festooned all over with purple-magenta Bougainvillea. I have never seen anything to beat it at Chelsea show or Chelsea studios!

It was good to sit for a while in the public garden at Arica, before going back to the Orbita; a pleasant garden, with trees and shady seats, plenty of flowers, fountain pools with gold fish, and any amount of birds. All about were charming little notice-boards asking one not to harry the birds, nor to persecute the reptiles, and so forth, and one to the effect that " He who plants a tree does a good work, whilst he who destroys one without cause is either a fool or a knave."

When we got on board again, the procession of guano birds was returning from the fishing grounds and settling down.

Our last landing before reaching Valparaiso was at Antofogasta, a largish town with barren, waterless hills rising steeply behind. We spent several hours ashore and discovered little of interest and almost nothing of beauty. Water is obviously scarce in Antofogasta, coming by pipe-line from San Pedro, 193 miles away, and although it has the reputation of being the best paved town in Chile, the streets have the smell of a stale zoo. The public gardens, however, are a very gallant effort, especially in view of the scarcity of water. They are about a mile long, although only fifty yards or so wide. Birds were plentiful, pale grey warblers and tiny doves; one section—as in so many Chilian public gardens—is set apart for children, with swings, and see-saws and polished wood toboggan-slides, and there were quantities of shady trees and bright flowers, Roses, and a particularly splendid blue Ipomoea. I have stated we found little of interest in Antofogasta. Yet there is a certain interest in the grim ugliness of a town such as this, which exists almost solely as an outlet for the wealth of copper and nitrate which comes from the desert hills which lie inland. And it is interesting to realise what an enormously high percentage of such a town — building materials, fittings, paving materials, everything in the shops, all that feeds and keeps going a population of 50,000 inhabitants—has been brought there, overseas, or by rail. The utter barrenness of the surroundings emphasised how unself-supporting the town is, and one realised what a frail, vital artery must be the pipe-line water supply.

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[*] August 13, 1927, p. 127, Fig. 55.

[†] Reproduced by courtesy of the Director of the Royal Botanic Gardens, Kew.

[‡] *Garden*, July 6, 1895, p. 11.

[§] *Gard. Chron.*, July 22, 1893, p. 86.

[*] *Gard Chron.*, Oct. 8, 1927, p. 289.

And so back on board, for the last short leg of our voyage to Valparaiso, to Chile and the Andes. *Clarence Elliott.*

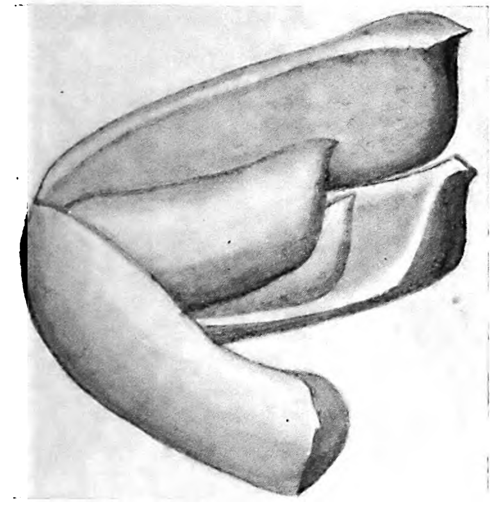


FIG. 7.—GLOTTIPHYLLUM SUAVE.

A growth of an imported plant, natural size. Flowers pedicellate, fragrant.

MESEMBRYANTHEMUM.

(*Continued from* VOL. LXXXII, *p.* 511.)

12.—GLOTTIPHYLLUM, HAW.

23. G. suave, N. E. Br. (Fig. 7).—Growths in the only plant seen crowded. Leaves directed forwards, not very spreading, 1½–2 inches long, 8–12 lines broad and 3–6 lines thick on an imported plant, probably becoming larger under cultivation, with the pairs more or less obliquely crossing one another, flat on the face and one of a pair with an oblique keel at the apical part, and much thicker and more convex on the back than the other, usually more or less tongue- or strap-shaped, with parallel sides, but sometimes narrowing upwards, without a pustule at the base; apex variable, in the thinner and flatter leaf sometimes rounded, with a central very short, blunt point, sometimes obliquely subtruncate with a short, hard point at the end of the upper edge, as is usually the case with the opposed leaf having a keel on its face, its back being obliquely keeled and somewhat twisted at the apex; substance firmly fleshy; surface smooth, but with the usual raised surface-cells, as seen under a strong lens, dull green, sometimes tinted with brownish, scarcely shining, not pellucid-dotted. Pedicels none, or 5–6 lines long, subterete, very slightly 2-edged, glabrous. Calyx 5 lines in diameter in mature bud, produced beyond its union with the ovary into a short tube about ¾ line long, 4-lobed above, three of the lobes about 2 lines long and 3–4 lines broad, the fourth lobe being about 4–4½ lines long, all with whitish, membranous margins, but the membrane longer and broader on the longer lobe; three of them are slightly keeled and the keel minutely ciliate on the back. Corolla expanding in the morning, irrespective of sunshine and even in a darkened room, at first cup-shaped and about 2½ inches in diameter, finally nearly flat, with recurved tips to the petals and nearly 3 inches in diameter, when closed the petals twist together, in the early stages of the flower they all close together at the tips, but later, when they have grown longer, they twist closely together to about the middle, and then the tips spread out; fragrant; petals about 50, in 1–2 series, finally rather lax, 1–1½ inch long, 1 line broad, linear, obtuse or somewhat acute, entire, clear yellow on both sides; shining. Stamens numerous, arranged in a ring, about ⅓ inch long, yellow. Stigmas, 8, about 2 lines long, plumose, very pale yellowish or whitish. Ovary partly superior, flattish on the top.

Ladismith Division: Near Plathius, Muir 3989!

This species is evidently allied to G. depressum and G. fragrans, its leaves being somewhat like those of G. depressum, but less spreading, and it differs from both species by having pedicellate flowers. The calyx is very much smaller than that of G. fragrans, and I suspect also than that of G. depressum, but the latter I have not seen. It is stated, however, not to expand its flowers except in bright sunshine, while I find the flowers of G. suave will expand in a very dim light, for after taking the plant into a room to describe, I left it there all night, with its flowers tightly closed, and was astonished to find the corolla widely expanded the next morning between 8 and 9 a.m., while the room was very dimly illuminated, daylight being excluded by a Venetian blind and side curtains and the morning sunless and cloudy. I left the plant in the room all that day (at the end of January), and at night excluded as much light as I could by means of the blind and curtains, the corolla then having its petals tightly twisted together up to their middle, with the tips spreading. The next morning, about 9 a.m., before the blind was drawn up, the corolla was widely expanded and fragrant, the room being very dimly illuminated, this morning also being sunless and very gloomy, and the temperature below 60° Fah.! I have now (Sept. 28, 1927) repeated the above experiment with the same result. How do these and other plants know when it is time to open their flowers? For in the case of this species it seems evident that it is not strong light or sunshine that causes it to expand its flowers, but that it is influenced in some mysterious way by the time of the day. Yet certain other species of this genus will only expand their flowers in bright sunshine, and not at all on a dull day, and even on sunny days will not fully open them unless the temperature is 70°Fahr. or higher.

24. G. linguiforme, N. E. Br., in *The Gardeners' Chronicle*, 1921, Vol. LXX, p. 327 (Fig. 8).—Growths more or less pressed upon the ground, with the leaves usually edgeways to the sky. Leaves in two ranks, 2–3 inches long, 14–16 lines or more broad, 4–5 lines thick, tongue-shaped or somewhat oblong and slightly narrowing towards the apex, usually straight and widely spreading, sometimes slightly upcurved edgeways, flat on the face and one leaf of a pair usually with an oblique ridge or keel near the apex, obliquely convex on the back, the upper edge being very acute and somewhat cartilaginous, and the lower edge thickened and obtuse, especially in the larger leaf of a pair, and at the base on the upper side, where pressed against the young leaves, are usually raised slightly and sharp at the edge, but the raised part does not form a pustule; surface smooth and shining, without elevated surface-cells, as seen under a strong lens, deep green. Flower sessile. Calyx large, somewhat 3-4-angled, unequally 4-lobed; lobes broadly ovate, the two outer acutely keeled and the inner two with large, membranous margins. Corolla about 3 inches in diameter, expanding in the morning; petals in 1–2 series, rather lax, about 13–15 lines long and 1¼–1½ line broad, cuneately linear, obtuse and toothed at the apex, yellow on both sides, shining. Stamens very numerous, yellow. Stigmas 10–11 spreading, 1½ line long, plumose.

Mesembryanthemum linguiforme, Linn., *Sp. Pl.*, ed. 1, p. 488 (1753), and ed. 2, p. 699, founded upon M. folio scalprato, Dillen., *Hort. Elth.*, p. 235, t. 183, f. 224; N. E. Br. in *Journ. Linn. Soc., Bot.*, Vol. XLV, p. 70, not of other authors. M. scalpratum, Haw., *Obs.*, p. 187 (1795), *Misc. Nat.*, p. 32, *Syn. Pl. Succ.*, p. 220, and *Rev. Pl. Succ.*, p. 94; Salm Dyck, *Mes.* §8, f. 1. M. lignuiforme var. scalpratum, Berger, *Mes. und Port.*, p. 242, f. 51, copied from Salm Dyck. And probably M. lucidum, Mill. *Dict.*, ed. 8, N. 43 belongs here, as he quotes Tournefort's description for it, which seems clearly to indicate this species as being it and not the plant to which Haworth applied the name of M. lucidum.

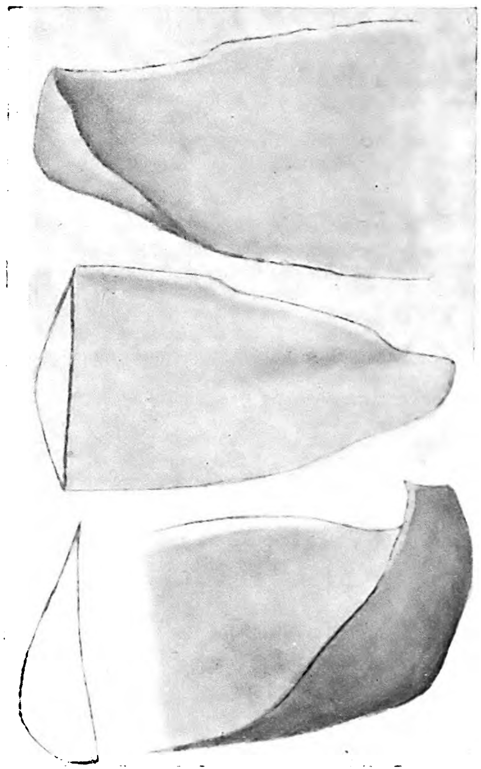


FIG. 8.—GLOTTIPHYLLUM LINGUIFORME.

Portions of three leaves and a transverse section of a larger leaf of a pair; natural size. Flowers sessile.

South Africa: Locality and collector unknown. In cultivation in 1714 according to Aiton.

Although this is one of the oldest known species of the genus and still in cultivation, there appears to be no record of its rediscovery since the time when Dillenius described and figured it in 1732. It is nearly allied to G. fragrans, but is easily distinguished from that and all others by the very sharp, knife-like upper edge of the leaves, especially of the larger leaf of each pair, and the absence of raised, transversely-elongated surface cells, such as exist on G. fragrans as seen when viewed with a strong lens. Fig. 8 is made from a living plant.

25. G. fragrans, Schwantes, in *Zeitschr. f. Sukkulentenkunde*, Vol. II, p. 242 (Figs. 9, 10 and 11).—Growths normally very short and clustered. Leaves about 3 pairs to a growth, in two ranks, and sometimes more or less depressed edgeways to the soil, exceedingly variable on the same plant at different periods of its life, sometimes on South African plants only 9–20 lines long, 6–11 lines broad and 4½–6 lines thick, ovate or roundish-ovate, flat on the face and very convex on the back, rounded, obtuse or subacute at the apex, being somewhat like half-an-egg in form, developing from this up to 3 inches long and 9–14 lines broad somewhat tongue-shaped, straight or curved edgeways, flat (or towards the tip of the longer leaf of a pair somewhat concave) above, convex beneath, narrowing from about an inch below the apex to a rounded or blunt point, which in the longer of each pair is produced beyond the flat or concave face; sometimes where the flattened part ends (caused by the pressure of the smaller leaf upon it in bud) the longer leaf is somewhat hooked. Flowers sessile. Calyx in mature bud 9–12 lines in diameter, compressed-triangular, subequally 4-lobed; lobes 4–5 lines long, 3½–4½ lines broad, ovate, two of them acute and two very obtuse, with broad membranous margins. Corolla 2¼–3¼ inches in diameter, according to age, expanding in the morning; closed at night and lasting about a week, fragrant; petals numerous, in about 2 series, finally rather lax, 1¼–1¾ inch long, 1–1½ line broad, cuneately linear, obtuse and minutely toothed at the apex, bright clear yellow on both sides, shining. Stamens numerous, about 4–5 lines long, at first erect and clustered, but when the stigmas expand they become spread out into a ring. Stigmas yellow, 8–10, about 2½–3 lines long, plumose, at first erect, afterwards spreading.

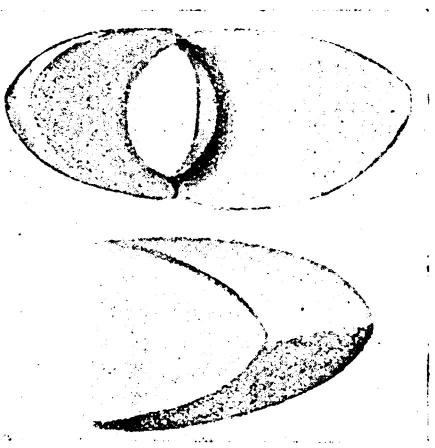


FIG. 9.—GLOTTIPHYLLUM FRAGRANS.

Growth of an imported plant, and leaf from another imported plant, in the resting state; natural size. Flowers sessile.

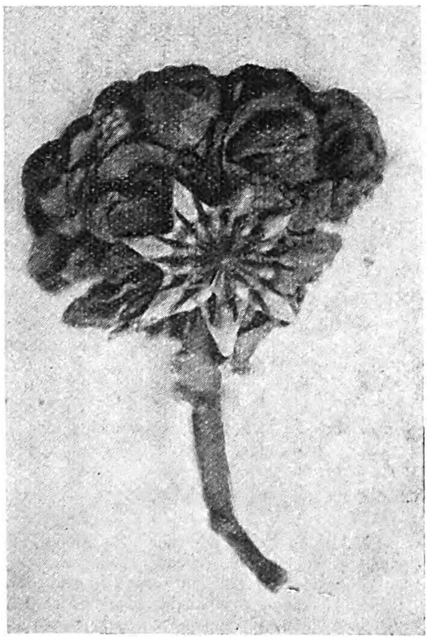


FIG. 10.—GLOTTIPHYLLUM FRAGRANS.

Dead imported plant, in a resting state, showing the small, ovate leaves and an expanded capsule; natural size.

Mesembryanthemum fragrans, Salm Dyck, *Obs. Bot.*, p. 8 (1820), and *Mes.* § 8, f. 2; Link and Otto, *Ic. Pl. Sel.*, p. 83, t. 43; Haw. *Rev. Pl. Succ.*, p. 95; *Bot. Mag.*, t. 8937. M. linguiforme var. fragrans, Berger, *Mes. und Port.*, p. 242.

Ladismith Division: Klein Karoo; Plathuis region; Pole Evans! Muir 3907! Swellendam Division: On the Bokkeveld shales and in rock crevices at Koenie Kuilen, at about 1800 feet elevation, flowering in April, Muir 3893! Originally raised from South African seeds at Carlsruhe Botanic Garden in 1816.

In my former account of this genus in *The Gardeners' Chronicle*, 1921, Vol. LXX, p. 327, I suggested that this might be the same as G. depressum, but now that I have seen more material of it I believe that it is quite distinct.

Different individuals of this species differ widely and would doubtless be often mistaken for distinct species, and it is rather unfortunate that when the *Botanical Magazine* plate was published that an unpublished drawing of the very same individual made in 1919 (two years earlier than that of the published plate) was not also included on the plate to show the great vegetative variation of this species. When I first received a plant of Muir 3907 it was so very different in appearance from G. fragrans that I certainly mistook it for a new and very distinct species, the leaves being small and ovate, as shown in Fig. 9, the young pair, having their flat faces closely pressed together, formed an egg-shaped central body about an inch long, the outer pair being rather larger. Dr. Muir informs me that a number of such growths are formed upon the top of a rootstock forming a hemispherical mass 4–6 inches in diameter, with leaves pointing in all directions. Under cultivation, however, it becomes G. fragrans.

Fig. 10 represents a plant at rest as it grows in South Africa in a very dry season, showing the ovate leaves and an expanded capsule, natural size, but the leaves are, of course, much larger when alive. Fig. 9 is from a similar living, imported plant, showing the ovate leaves as they developed at Kew. Fig. 11 is from a photograph taken by my daughter of a plant cultivated by myself, natural size. *N. E. Brown.*

(*To be continued*).

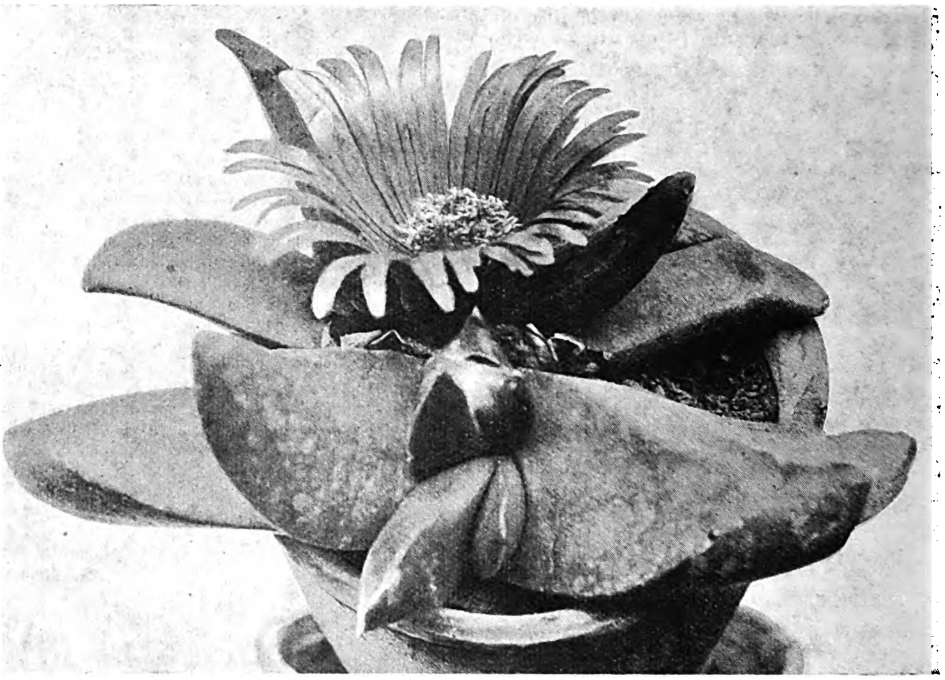


FIG. 11.—GLOTTIPHYLLUM FRAGRANS.

GARDEN MANURES IN JANUARY.

Many growers would probably be astonished if they knew how much waste occurs in the use of manures, chiefly proprietary and so-called artificial manures. While it is admitted that many of the proprietary manures are excellent, it cannot be denied that others are scarcely first-class, and the results from their use do not justify the prices asked; in any case, however, the grower who really understands the uses and values of crude chemical manures and can apply them so that the plant derives the greatest possible benefit, without waste, is in a strong position.

Modern manuring is a highly specialised art and the productivity of our soils depends to a large extent on systems of manuring, but these systems are subject to change, following the altered conditions of modern life. In comparatively recent times the garden was the dumping ground for the manure from well-kept stables, and this material formed the basis of the gardener's system of manuring. To-day, this source of supply has entirely ceased, except in a few hunting districts, and the problem is still further accentuated by the fact that mechanical tillage is tending to reduce the supply of farmyard manure, thus rendering it still more difficult to obtain.

It is a generally accepted axiom that the best results are obtained from manuring under a system whereby moderate applications of a bulky organic material, such as farmyard manure, or vegetable refuse, are supplemented by dressings of various artificial manures applied at times and in quantities to suit the needs of the particular crop under cultivation. Although the success of these operations is generally estimated in terms of yield of increase in crops, the action of manures generally is rather more complex than this, and a well-thought-out scheme takes a wider outlook. Such factors as residues in the soil, the improved textures of soils for future crops, the acceleration of the maturity of crops—which may enable the grower not only to forestall a glut market but also to prepare earlier for a subsequent crop—and the power of a well-balanced soil to enable a plant to resist disease, are all to be reckoned with.

On the other hand, applying manures at the wrong time, the digging in of finely-ground artificial manures instead of applying them to the surface, and excessive applications of nitrogenous manures to roots—which may increase the weight of the crop but depress its sugar content, thus reducing the alimentary value—are factors involving waste. In issuing a balance sheet of profit and loss in any system of manuring, all these factors must be considered, and the wisest system is one that is based on the widest outlook.

In framing a general scheme, the application of manures in January is frequently modified by the weather, for when tilling operations are at a standstill one cannot incorporate bulky organic manures with the soil. Certain growers apply such slow-acting, inorganic manures as basic slag and kainit at this period, but whether this is wise practice is a debatable point; I certainly advise earlier application.

Where liming is contemplated, applications may be made in January, preferably as a surface dressing to ground that has been dug or trenched previously. Finely-ground limestone is probably the most convenient form in which to apply it, and for general purposes is to be recommended. Those who prefer to apply it as caustic lime should not lose sight of the fact that in this state its action is to partly destroy organic matter, and such a loss should be avoided on all light, sandy soils. Lime is a very important element, the value of which is still insufficiently understood, and, apart from its value as an agent in neutralising acidity, it acts as a base in many chemical reactions which occur in the soil and effect the elaboration of plant food, and more or less controls the efficiency of some chemical manures. For example, there is probably no more potent fertiliser, capable of being used on a large scale, than sulphate of ammonia—other conditions being suitable. This fertiliser uses up, however, a certain amount of calcium in the transformations which it undergoes in the soil, and if there is insufficient base material its fullest value cannot be obtained. Because such fertilisers as basic slag and cyanamide contain appreciable amounts of lime, many growers think that the calcium content of the soil is rendered safe by their use only, but in the quantities usually applied they can hardly be reckoned as substitutes for lime dressings, therefore liming may be necessary. *W. Auton.*

FRUIT GARDEN.

SOME EARLY PEARS.

A LARGE selection of early Pears is not advisable, but rather is it necessary to plant a small collection suited to the soil and situation.

Our earliest Pear is Doyenne D'Ete, or Summer Doyenne; the fruits ripen in July and are small, almost round, pale lemon-yellow, with a red flush. The yellowish flesh is decidedly palatable and refreshing and the fruits are undeniably welcome during warm weather. The tree is prolific and grows well. A very old variety, this little Pear was raised by the Capuchin Monks in 1700.

Dr. Jules Guyot is markedly similar to Williams's Bon Chrêtien, but as the fruits lack something of the musky flavour inseparable from the old favourite, it claims many adherents. This is a reliable Pear almost anywhere, but in the warmer localities its flavour is enhanced. The fruits should be gathered a little before they part freely from the tree, and then, in a cool store, they may be kept for an appreciable time during September. Williams's Bon Chrêtien needs no eulogium; suffice it to say that for all general purposes, it is possibly the most serviceable early Pear we have.

Triomphe de Vienne has a large, somewhat conical fruit, yellow, with a red flush; the white flesh is of excellent flavour. The fruits should be gathered in September before they become fully ripe. The tree thrives in most soils and *situations*, and is excellent in bush or pyramid form.

Souvenir de Congres is a very large Pear, of bright yellow colouring, with a little cinnamon-russet and a bright red flush; the yellow flesh is of fine flavour. The tree is of moderate growth, fertile, and succeeds best on the Pear stock.

Marguerite Marillat is well worth growing for its handsome appearance; the very large fruits are uneven in outline, pale yellow, with a vivid scarlet—shading to pink—cheek. The yellowish flesh is pleasantly flavoured and juicy; the tree is vigorous, requires hard pruning, and is successful in any form.

Laxton's Superb (Beurré Superfin × Williams's Bon Chrêtien) is worthy of extended cultivation and may, when more widely known, well become the most popular early Pear. The large fruits, deliciously flavoured, ripen in August.

Jargonelle, stated to have been in cultivation prior to 1600, is too well-known to need a description. It should most certainly be grown against a wall or also in standard form. It ripens in August.

Other early Pears are Clapp's Favourite, quite good in some districts; Colmar d'Ete, Beurré d'Amanlis and Beurré Giffard, all worthy of cultivation under conditions congenial to them. *E.*

FRUIT REGISTER.

APPLE BRABANT BELLEFLEUR.

It gives me the greatest pleasure to confirm all that *Pomona* wrote recently (Vol. LXXXII, p. 492), concerning this Apple. It is an excellent cooking variety, and when dessert Apples are scarce, as they generally are in April, it compares favourably with other sorts that have to be used for this purpose, provided they are allowed to hang late on the tree before being gathered.

I had an excellent dish of this variety last year, and I had intended to place the fruits before the Royal Horticultural Society's Fruit Committee, but quite forgot to do so. Only a week or two ago, I was talking to one of our leading hardy fruit specialists, who agreed that this Apple should be grown far more than it is; and yet one seldom sees it listed in catalogues. The variety crops well, and if the fruits are thinned judiciously, the tree rarely fails to give a good return.

PEAR PRESIDENT BARABE.

I AM afraid I have not had such excellent results with this late Pear as your correspondent (see page 492, Vol. LXXXII), but I agree with him that its cropping qualities are good, for the tree hardly ever failed to produce some fruits. The difficulty I experienced with this Pear when in charge of The Node Gardens was to mature the fruits sufficiently before they fell from the tree, with the result that they shrivelled badly—being gathered early—and were of poor flavour. The trees were double cordons growing on a south-east wall, but the subsoil was heavy and cold, and may have been the cause of this failure. *T. Pateman.*

HOME CORRESPONDENCE.

Acclimatisation of Plants.—Those who, like myself, are amusing themselves by attempting to establish various half-hardy plants, will have read the article by Mr. Comber, in *The Gardeners' Chronicle* of December 17, 1927, with great interest. The article was peculiarly appropriate in view of the spell of severe weather through which we have just passed, which, although not characterised by abnormally low temperatures, was, by the continuity of day and night temperatures below the freezing point, and the particularly searching easterly and north-easterly gale which blew most of the time. It is to be hoped that later, Mr. Comber will tell those who have not had the pleasure of visiting Nymans how his plants have fared, particularly noting the aspect, soil, and presence or absence of shelter. In his opening paragraph, Mr. Comber states that it is not possible to tell by examination whether a plant will withstand low temperatures or not. Many years ago an old college friend of mine, Mr. F. Mason-Jones, who was, or is, attached to the Ministry of Agriculture and Fisheries, carried out some work on the resistance of evergreens to freezing. Whether the work was eventually published, I do not know, but I recollect that he found that the cell sap of the leaves of hardy evergreens had a higher osmotic pressure than that of deciduous trees, and such cell sap would offer a greater resistance to freezing, which, owing to expansion, causes the cells to burst and leads to general disintegration of the tissue. I do not know whether any further work has been done on this subject, but if not, it would offer a valuable and interesting field of research for an enthusiastic amateur to compare the osmotic pressure of the half-hardy plants we are able to acclimatise with hardy plants on the one hand, and with tender plants of the same genus on the other. *E. B. Anderson, Hemyock, Devon.*

Birds and Fruit.—I have been studying with interest the series of notes in your columns on the above subject, and I do not think that one of your correspondents has got quite to the root of the matter. I accept the fact that birds do both good and harm, but the outstanding point to me is that legislation has disturbed the ordered balance of nature. Of all agitators, the humanitarian is the most noisy and persistent, and he invariably invokes the aid of science and research to back him up. But there is another side to this big question. I can recollect a time when I should probably have been mainly in agreement with him, but in late years my views have undergone considerable modification. What careful and constant observer is there who will not confess to the increased and increasing damage done to fruit crops during the last three or four decades. It wants no verification; it is patent and obvious to everyone. The Wild Birds Protection Act, with its periodical and increasing restrictions, is, to my mind, responsible for most of the trouble. The man with the gun (or, in former days, some other lethal weapon) and the small boy with his natural predatory instincts, were all part of the well-ordered system of nature, and so soon as legislation begins to interfere with this system, trouble commences. The activities of the man with the gun have become circumscribed, and as for the small boy, he has simply become frightened out of taking a bird's egg of any sort or kind. A resulting consequence is that birds have become far too numerous, and the time-honoured maxim that the harm they do is outweighed by the good, has become open to grave doubt. I quite anticipate that the arguments I use will be termed ingenious—that is the usual reply in a case of this kind. They are not ingenious; they are born of careful thought, careful observation, and, I hope, common sense. *F. Herbert Chapman, Rye.*

——It is not easy to see how Mr. A. T. Johnson's letter (p. 514, Vol. LXXXII) on the blue-tit advances matters much. He forgets, I think, that such researches as those of Mr. Collinge do not afford a balanced result where the blue-tit is concerned; for in such investigations the evidence of the destructiveness of that bird is from its very nature necessarily obscured. The insects the blue-tits destroy are found in its stomach, the Pears are not. Even if the tiny fragments pecked from the Pears are generally swallowed—and I do not think they often are—they are so trifling in bulk as to bear a most misleading relation to the actual damage done; and in most analyses of stomach contents would not appear at all, except in miscellaneous vegetable matter. Nor is it easy to see how Mr. Johnson justifies his attitude of somewhat self-righteous indignation towards his opponents. Is his own position, ethically, so much sounder? What is the basis for the suggestion that an interest in blue-tits is so much more proper to and worthy of the community than an interest in cultivating Pears, as to call for a one hundred per cent. gratification of the former at the expense of a ninety-four-and-a-half per cent. sacrifice of the latter. In what way is Mr. Johnson—who would use stoats to kill his mice and voles—better than the keeper who uses a gun to kill stoats, or Mr. Durham who would use something else to kill blue-tits? How, too, does Mr. Johnson know that his is the voice of the community, and Mr. Durham's not? In any case, that "common justice" to which he appeals, would seem to require the majority not to press any rights it may have in blue-tits so hardly as to forbid the enjoyment by the minority of its equal rights in Doyenné du Comice Pears. Moreover, that "common sense," of which also he writes, would seem to suggest that, whereas there are a few people in the world vitally interested in the growing of Pears, and, to quote Mr. Johnson, "a few other people . . . . unbiassed enough to view the matter in the light of common justice and common sense"—and consequently, of course, to prefer blue-tits to Pears—there is in between a vastly greater population which really does not care two straws one way or the other. Meanwhile, every serious ornithologist knows to-day that Wild Birds Protection Acts and a higher standard of humanitarian education have resulted in an increase in the numbers of some birds, which was not generally forseen in the first instance, and which has created a situation which requires dealing with. There is a duty upon bird-lovers to see that the circumstances which have benefited them so much are not allowed to develop to the point of inflicting avoidable injury upon others. The protection of such birds as have increased to an injurious extent should temporarily cease. As a naturalist and lover of birds, I think the nitiative in this should come from us. It is not a question of whether a bird does good as well as harm; Mr. Collinge has settled all such questions for us. It is rather a question of whether the reduction in numbers of some birds would not result in a lessening of the injuries they inflict, without much reduction in the benefits they confer. Let the local Naturalist Societies investigate cases of complaint, and where a case is made out for reduction, let them join hands with the injured growers in urging the authority concerned to take the action required. The holding out of a hand in this way will lead to a much readier response, and in the end be much better for the birds than any amount of Mr. Johnson's scorn. If something of the kind is not done, the time is coming when the great mass of the community, now indifferent, will awake to the fact that there is an element of oppressive injustice about the attitude of Mr. Johnson and his like. They will begin to take sides, and being mainly concerned with the business of getting a living, are likely to look upon the growing of Pears, which are a food, as much more like business than watching blue-tits. This is why, as a bird-lover, I fear Mr. Johnson far more than I fear Mr. Durham. *H. A. Greatorex, Norwich.*

Mulching Roses.—As much valuable information is gathered from the "Correspondence" columns of *The Gardeners' Chronicle*, I ask your kind permission for a little space re the manuring of Roses. In this locality, many gardeners, particularly private growers, are in the habit of mulching established Rose beds each autumn with cow manure, but two methods of procedure are carried out, *i.e.*, simply spreading the manure on the beds and leaving it until pruning time in March and then forking it lightly in; or, forking the manure in immediately it is applied in November, leaving the surface rough all the winter. I have tried each method, noted the results, and find very little difference, so far as the Roses are concerned, but the soil is much improved in the beds which are forked in autumn, and is easily worked by the hoe in summer. Those who fork the manure in during autumn maintain that manure placed on the beds and left all the winter occasionally becomes frozen and damages the trees, especially should the manure be of a strawy nature, which is apt to touch the Rose growths well above the surface of the beds. I am only a young grower, having 1,500 trees under my control, but I have always mulched in the autumn, forking the manure in after pruning—the last week in March—and liming every third year. My trees are all healthy and vigorous, producing blooms from the second week in July to the end of November, but I should like a few of my friends who read these notes to expound their views on the subject, for although one is generally guided by personal experience, I am ready to accept advice from my elders. *G. H. Stead, Castle Lodge, Sandal, Wakefield.*

SOCIETIES.

ROYAL HORTICULTURAL.

January 3.—As was to be expected, the first show of the year was a small one from the floral point of view, although there were sufficient exhibits of general interest to justify the fixture. The older Fellows of the Society recalled decidedly smaller shows which were held early in the year in former times. Orchids were shown more extensively than were general flowers, and there were several very interesting collections on view. The exhibits before the Floral Committee consisted of three collections of Carnations, one of various greenhouse plants, and there were the customary winter exhibits of garden sundries and paintings. Only one new plant was submitted and it was recommended for an Award of Merit. The Fruit and Vegetable Committee recommended a Gold Medal to a splendid collection of vegetables and an Award of Merit to a new Apple. There was also an admirable collection of Apples.

Orchid Committee.

Present: Sir Jeremiah Colman, Bart. (in the chair), Mr. Gurney Wilson (Hon. Sec.), Mr. Fred J. Hanbury, Mr. Flory, Mr. A. Dye, Mr. Fred K. Sander, Mr. A. McBean, Mr. Charles H. Curtis, Mr. E. R. Ashton, Mr. T. Armstrong, and Mr. S. H. Low.

Awards of Merit.

Odontonia Aglaon (*Odontoglossum Aglaon* × *Odontonia Thais*).—In this handsome hybrid the large flowers are purplish-crimson, with deep, rose-coloured and white markings on the sepals and petals. The wide lip is blush-rose at the apex, with deep rose markings on the central area, a ruby-crimson base and yellow disk. Shown by Messrs. Charlesworth and Co.

Groups.

A striking plant in the group of Orchids exhibited by Messrs. Sanders was Angraecum eburneum, carrying two large spikes of its green and white flowers. Another interesting plant was the new Odontoglossum Wyattianum, a species obtained from the Rev. Paul Wyatt, Bedford, to whom it was sent by a friend who collected it in Peru; this appears to have some affinity with O. Harryanum, but the flowers are smaller, with green sepals and petals, the latter having purple shadings and markings at the base; the lip has rose-purple markings over the basal portion and a whitish, spreading apex. Other fine plants were Cypripedium Dulcis var. General Leman, with a beautifully waved edge to the wide, white margin of the dorsal sepal; C. Londinium, C. Tally Ho var. Alpha, Odontonia Brugensis, Odontioda Hemptiniana and Cymbidium Erica Sander.

Oncidium macranthum figured in the group from Messrs. Stuart Low and Co., and with this were associated Odontoglossum grande, bearing eight flowers; a fine plant of Laelio-Cattleya Schröderae, Oncidium Papilio, and such quaint species as Bulbophyllum sicyobulbon, Cymbidium Gamieanum and Rodriguezia crispa, but the brightest flowers in the group were those of the yellow Cymbidium Lucaste.

Messrs. Armstrong and Brown submitted a collection of Cypripediums that included fine flowers of C. T. B. Armstrong, C. Alcibiades var. illustris, C. Lord Wolmer, C. Leeanum var. Stanley Rogerson, C. Roger Sander, C. Actaeus, Hanbury's var., and C. Maudiae. Some Odontoglossums and Odontiodas, and a pretty plant of Restrepia striata were also shown in this exhibit.

A very bright and beautiful group of Orchids was arranged by Messrs. Charlesworth and Co., and here the principal attractions were graceful and well-developed spikes of Odontoglossum Terentia, with eighty red and blush flowers (Cultural Commendation); fine forms of O. crispum, including O. c. xanthotes, O. Tityus, O. Bonar Law, O. Regium, O. Carola and O. Wilckeanum, both with yellow colouring; O. Duvivierianum, O. Elaine, and O. Lucretia. Cypripediums were included in the display, and also Masdevallia Schröderae, M. tovarensis, Odontioda Acis, of fine colour; Odontonia Aglaon, Vuylstekeara Aspasia, and Brasso-Cattleya British Queen.

A few capital Cypripediums were shown by Messrs. Black and Flory, C. Baldoran being very effective. Messrs. A. J. Keeling and Son submitted Dendrobium Lady Colman, Masdevallia Measuresianum and several good Cypripediums. Odontoglossum Armstrongiae, Stonehouse var. with pretty salmon colouring, was shown by H. Worsley, Esq., Stonehouse, Haslingdon.

Messrs. J. and A. McBean showed Cymbidium Evelyn (C. Coningsbyanum × C. insigne), with big, Apple-green flowers.

Floral Committee.

Present: Section A.—Mr. Henry B. May (in the chair), Mr. J. F. McLeod, Mr. Arthur Turner, Mrs. Ethel M. Wightman, Mr. J. M. Bridgeford, Mr. David Ingamells, Mr. Montagu C. Allwood, Mr. Donald Allan, Mr. W. Howe, Mr. E. R. Janes, Mr. A. Vasey, Mr. J. B. Riding, Mr. W. B. Gingell, Mr. D. B. Crane, Mrs. Helen Lindsay Smith, Mr. Charles H. Pearson and Mr. Cartwright (Secretary).

Section B.—Mr. Gerald W. Loder (in the chair), Mr. Charles T. Musgrave, Mr. E. H. Wilding, Mr. T. Hay, Mr. F. G. Preston, Mr. A. Bedford, Lady Beatrix Stanley, Mr. Mark Fenwick, Mr. R. C. Notcutt, Mr. E. A. Bowles, Mr. L. R. Russell and Mr. N. K. Gould (Secretary).

Award of Merit.

Callicarpa sp., Farrer 1,446.—The award to this sub-deciduous shrub was subject to its being named. This being the only novelty before the Committee was rather an instance of history repeating itself, for at the last autumn meeting of the Horticultural Society in 1858 a Callicarpa excited considerable speculation and interest, although then the generic name of the new plant shown by Mr. Standish, of Bagshot, was uncertain. Afterwards it was considered to be Callicarpa purpurea, which had been first introduced from India in 1822. A fruiting branch was ilustrated in *The Gardeners' Chronicle* of February 5, 1859. The Callicarpa now shown was raised from seeds collected by Farrer in China and, as it is a variable genus, may possibly prove to be a form of the older species. The older leaves had fallen, but those on the fruiting portions of the branches were retained and were opposite, ovate, acuminate, about five inches long by one-and-a-half inch across at the widest part, sage-green above and paler below, and distinctly woolly. The small, shining, violet-purple fruits were borne in dense axillary clusters. Shown by Lionel de Rothschild, Esq. (gr. Mr. A. Bedford), Exbury, Hampshire.

Groups.

An interesting collection of greenhouse plants, arranged by Messrs. Stuart Low and Co., included some large, well-grown specimens of Eranthemum pulchellum, Thyrsacanthus rutilans, Erica melanthera and Eucharis grandiflora. Adjoining this collection, Messrs. Stuart Low and Co. had vases of very good Carnations. The principal varieties were Daphne and Ramie, two attractive Fancy sorts, Betty Low and Eileen Low.

A goodly collection of Carnations was also shown by Messrs. C. Engelmann, Ltd., who set up ample vases of Red Laddie, Mrs. Walter Hemus, Betty, Laddie, Topsy, Hebe, Spectrum and other useful varieties. Dianthus Allwoodii were the chief feature of the exhibit of Messrs. Allwood Bros., who displayed attractive bowls of the richly-coloured Barbara, Freda, bright mauve; Pat, pale rose; and Hugh, purple. They also showed Cattleya Mauve, Topsy, Triumph and Maud Allwood of the perpetual-flowering Carnations.

The many exhibits of garden sundries included a well-designed span-roofed greenhouse and attendant garden frames, shown by Messrs. Boulton and Paul; the labour-saving Shoulder-hoe; a selection of well-made garden tools from Messrs. Richard Melhuish and Co.; the Chase Continuous Cloche, an attractive dove-cote, garden seats and other articles by Mr. C. White; the Rolcut Secateur; indestructible labels by Mr. John Pinches; Alvesco White Fly Destroyer, by Messrs. Murphy and Co.; Messrs. Jeyes' well-known disinfectants and other preparations; Radium Fertiliser and a good selection of stone vases and garden ornaments by Messrs. Sander and Co.

Fruit and Vegetable Committee.

Present: Mr. H. S. Rivers (in the chair), Mr. W. H. Divers, Mr. A. Poupart, Mr. Edwin Beckett, Mr. H. Prince, Mr. W. F. Giles, Mr. A. Bullock, Mr. R. H. Hall, Mr. T. Pateman, Mr. G. F. Tinley, Mr. Joseph Basham, Mr. Joseph Cheal, Mr. P. A. Tuckett and Mr. R. A. Rawes (Secretary).

Award of Merit.

Apple Saltcote Pippin.—The general appearance of this handsome, late dessert Apple is well shown in the illustration in *The Gardeners' Chronicle* of November 19 last, but such an illustration necessarily fails to show the rich golden colouring of the flesh and the heavy, deep red flushing. The variety, which was raised from a pip of Ribston Pippin, is said to have a good habit and to be free-cropping. Shown by Messrs. Herbert Chapman, Ltd.

Groups.

What was probably the most meritorious exhibit of vegetables shown at mid-winter was set up by Messrs. Sutton and Sons. Not only was this composed of produce of the highest class, but it was displayed with their accustomed skill and art. Altogether one-hundred-and-twenty distinct varieties of vegetables were shown, and when it is stated that few were of Potatos, its comprehensiveness is realised. It included all the general vegetables and such uncommon sorts as Oxalis crenata, Tree Tomato (Cyphomandra betacea) and the Fir Apple Potato. There were also home-grown Tomatos of excellent appearance; the varieties were Best of All, Winter Beauty and Golden Nugget. The Broccoli were shapely, compact and of milk-white colour. The varieties included Superb Early White, Christmas White and Sutton's Winter Mammoth. This splendid exhibit deservedly received the Society's Gold Medal.

An extensive collection of Apples, staged by Messrs. J. Cheal and Sons, well illustrated the great variety that may be had in good condition at mid-winter, and later, when stored under suitable conditions. The many dishes were composed of shapely fruits and often possessed most attractive colouring. The principal varieties were Adams's Pearmain, Madresfield Court, Mother, Allington Pippin, Christmas Pearmain, Beaumann's Red Reinette, Winter Queening, Annie Elizabeth, Charles Ross, Bramley's Seedling and Sops-in-Wine.

READING AND DISTRICT GARDENERS'.

The December meeting was held in the Abbey Hall, when Mr. H. J. Marshall, of Messrs. Pritchard and Sons, Riverslea Nurseries, Christchurch, gave a most interesting lecture entitled, "The Progress of Various Families of Hardy Plants during the past Thirty Years." In introducing the subject, he said that some families had stood still while others had advanced beyond expectations. All the most popular families were dealt with, such as Aquilegias, Asters, Alströmerias, Campanulas, Chrysanthemum maximum, Delphiniums, Helianthus, Lupins, Irises, Papavers and Gladiolus primulinus.

A lengthy and interesting discussion followed, sustained by Messrs. Lloyd, H. H. Cook, C. Cook, Townsend, Dore, Reed, Clacy, Broomfield, Howlett and Waite.

A competition for twenty-five Brussels Sprouts brought nine entries, the first prize being awarded to Mr. A. H. Dow, The Gardens, Southampstead House; the second to Mr. H. Goodchild, The Gardens, Queen Anne's School, Caversham; and the third to Mr. E. Garnett, The Gardens, Calcot Grange. For Parsnips, Mr. H. Wade, The Gardens, Mortimer House, was placed first; Mr. G. Clark, The Gardens, Dyson's Wood, second; and Mr. C. J. Howlett, The Mews, Earley, third.

Obituary.

Mr. George Barratt.—We regret to have to record the sudden death, on December 28 last, of Mr. George Barratt, who for forty-one years was Superintendent of the vast Brookwood Cemetery. He entered the service of the London Necropolis Company sixty-two years ago, and during that time saw immense developments at Brookwood. At the present time, Brookwood Cemetery is the largest in the world. It has two railway stations, complete in every respect, with up-to-date waiting and refreshment rooms, and there are six churches in the cemetery. During the time Mr. Barratt was Superintendent, he had conducted just over 100.000 funerals, including 3,000 military interments during the war, and he estimated that before becoming Superintendent he had assisted at fully 25,000 funerals.

William Smith.—One of the best-known amateur horticulturists in the eastern counties, Mr. William Smith, of the Links, Bishops Stortford, died on Christmas Eve, at the advanced age of eighty-four years. Mr. Smith had been in his accustomed health until comparatively recently, and was attending to his business until a week or so before his death. Not only in the town of Bishops Stortford, of which he was one of the most valued inhabitants, but also throughout a much wider area his loss will be felt in many ways, as he was a man of sterling worth. The deceased gentleman was a member of an old Royston family, and a keen amateur gardener, being one of the most successful exhibitors of Auriculas at leading shows many years ago. Desiring to help local efforts, he became connected with the Bishops Stortford Horticultural Society and it was due to him that the old Society was rejuvenated and afterwards grew into the successful society of to-day. For many years Mr. Smith filled the position of Honorary Secretary, and it was during his years of office that the Bishops Stortford Flower Show attained a position of distinction. In appreciation of his work in this connection, he was presented with his portrait in oils and a gold watch.

TRADE NOTES.

Messrs. George Cobley, Kay and Co. have informed their clients that as from January 1, 1928, the partnership existing between Mr. Cobley and Mr. Kay will be terminated. Mr. George Cobley (as George Cobley and Co.) will continue to practise permanently, and Mr. Kay (as W. G. Kay and Co.), temporarily, at 27, Southampton Street, Strand, W.C.2. The two firms will maintain their friendship, and will co-operate for the convenience of clients.

In their comprehensive spring catalogue for 1928, Messrs. Toogood and Sons, Ltd., Southampton, offer their accustomed extensive variety of vegetable and flower seeds. The novelties include a Ten-weeks Cabbage, which they claim justifies its name in its quick maturity. Toogood's Prizewinner Cauliflower and their Market Forcing Cabbage Lettuce are also amongst the vegetable novelties. Blighmont Beauty Melon, raised by crossing Peerless with the Cantaloupe, is said to produce large, well-flavoured fruits when grown in a cold frame. Sweet Peas occupy several pages of the flower—seed section, and in addition to a selection of novelties from specialists, there are several of the firm's new seedlings. Amongst the less common seeds listed are those of the Christmas Rose, Achimenes, Astilbe Davidii and Thunbergias.

We have received from Mr. R. F. Calvert, Wholesale Bulb Grower, Carnsulan Nurseries, Coverack, Cornwall, a copy of his price list of Daffodils and a selection of calendars; all the latter are of considerable artistic merit. The catalogue is exceedingly well got up; art paper is used throughout, and the two dozen half-tone illustrations are particularly attractive. Many fewer varieties than is usual are listed, but the list comprises most of the latter-day varieties of merit from the leading raisers. Mr. Calvert has "gone in" for calendars rather extensively. They are of the panel type, with either tear-off date pads of the "Great Thoughts" style, or a weekly gardener's engagement pad. Most of the panels illustrate a popular variety of Daffodil, though the Hyacinth and Tulip are also depicted. These calendars are useful and ornamental adjuncts to the office.

ANSWERS TO CORRESPONDENTS.

Name of Fruits.—*A.* Reinette Franche; *F.L.* Lanes's Prince Albert; *G. B.* 1, Dumelow's seedling; 2, Baumann's Red Reinette; 3, Bramley's seedling.

Names of Plants.—*W. L. S.* 1, Dicranum scoparium; 2, Unium undulatum; 3, Brachythecium purum, and Hypnum Schreberi; 4, Polytrichum commune; 5, Eurhynchium praelongum; 6, Webbera nutans; 7, Plagiothecium undulatum; 8, Sphagnum cymbifolium; 9, Sphagnum Russowii var. girgensohnioides; 10, Thuidium tamariscinum; 11, Brachythecium purum; 12, Hypnum cupressiforme, Plagiothecium dentiulatum, and E. urhynchium praelongum (mixed); 13, Unium hornum; 14, Ceratodon purpurea; *C. F. K.* Salvia leucantha: *J. D. C.* 1, Veronica speciosa variety; 2, Achillea tomentosa; 3, Viola, a garden seedling; *A. B.* The common Bracken is Pteris aquilina.

Saxifraga Species Dying.—*S. R.* There is no disease present in the plant sent. We think the trouble is due to unsuitable conditions at the roots.

Weed Killer for New Road.—*A. A. H.* (1) The most powerful and effective weed-killers are those that contain arsenic, and are, of course, poisonous. One of the most highly concentrated is Cooper's Weedicide, one gallon of which makes a hundred gallons of solution, sufficient for 300 to 400 square yards. A non-poisonous weed-killer that will not injure domestic animals or poultry is McDougall's Perfect Safety Weed Killer, one gallon of which will make twenty-five gallons of solution, sufficient for 100 square yards. Both of these preparations are offered by Messrs. Cooper, McDougall and Robertson, Ltd., Berkhamsted, Herts. (2) The weed killers may be used now, but frequent rains soon dilute them too much. The best time to apply either of the above is in spring, after the grass has begun to grow, because it is more easy to kill at that stage. (3) The above weed-killers should be applied when the road is just moist, so that the liquid may be able to sink to the roots of the weeds. If the roads were dust-dry, much of the solution would run away from the surface. (4). The arsenical preparation noted above would be dangerous to dogs, if they were to eat the grass, or lick their feet after walking over the road while it is still wet with the weed-killer. The dogs should be kept from the road until it is washed by a heavy thunder shower, or a day's rain. The road could, however, be washed by means of a water-cart, a week after the application of the weed-killer, Should the weather be dry, there would be no danger after a week, as dogs do not eat dead grass. These precautions would be unnecessary in the case of the Perfect Safety Weed Killer.

Communications Received.—J. O.—J. G. M.—A. G. —H. G. P.—W. B.—G. H. R.—E. B.—H. S.—H. W. S.—R. McL.—A. J. T.—G. J.—C. T.—R. B. W.—J. F.—E. B.

MARKETS.

COVENT GARDEN, Tuesday, January 3rd, 1928.

WE cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Tuesday by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market and the demand, and they may fluctuate, not only from day to day, but occasionally several times in the day.—EDS.

Plants in Pots, etc.: Average Wholesale Prices.

(All 48's except where otherwise stated).

	s. d.	s. d.
Adiantum cuneatum per doz.	10 0	12 0
—elegans	10 0	15 0
Aralia Sieboldii	9 0	10 0
Araucarias, per doz.	30 0	40 0
Asparagus plumosus	12 0	18 0
—Sprengeri	12 0	18 0
Aspidistra, green	16 0	60 0
Asplenium, doz.	12 0	18 0
—32's	24 0	30 0
—nidus	12 0	15 0
Cacti, per tray 12's, 15's	5 0	7 0
Chrysanthemums, 48's, per doz.—		
—pink	18 0	21 0
—yellow	12 0	18 0
—bronze	15 0	18 0
—white	12 0	18 0
—red	15 0	18 0
Crotons, doz.	30 0	45 0
Crytomiums	10 0	25 0
Cyclamens, 48's, per doz.	27 0	36 0

	s. d.	s. d.
Erica gracilis, 48's, per doz.	24 0	30 0
— — 60's, doz.	12 0	15 0
—mixed, 72's, per doz.	8 0	9 0
—hyemalis, 48's, per doz.	18 0	36 0
—nivalis, 48's, per doz.	27 0	30 0
— — 60's, doz.	12 0	15 0
Hyacinths, 3's, per doz.	24 0	30 0
—60's, per doz.	12 0	18 0
Nephrolepis in variety	12 0	18 0
—32's	24 0	36 0
Palms, Kentia	30 0	48 0
—60's	15 0	18 0
Pteris in variety	10 0	15 0
—large, 60's	5 0	6 0
—small	4 0	5 0
—72's, per tray of 15's	2 6	3 0
Solanums, 48's, per doz.	15 0	18 0
—60's per doz.	8 0	10 0

Cut Flowers, etc.: Average Wholesale Prices.

	s. d.	s. d.
Adiantum decorum. doz. bun.	15 0	18 0
—cuneatum, per doz. bun.	10 0	12 0
Anemones, St. Brigid, per doz. bun.	8 0	9 0
Arums (Richardia), per doz. blooms	10 0	12 0
Asparagus plumosus per bun. long trails	2 6	3 6
—med. sprays	2 0	2 6
short „	—	1 0
—Sprengeri, bun. long sprays	2 6	3 0
med. „	1 0	1 6
short, „	0 6	1 9
Camellias, 12's or 18's, per box	3 0	3 6
Carnations, per doz. blooms	4 0	5 0
Chrysanthemums, per doz. blooms—		
—white	4 0	8 0
—yellow	5 0	6 0
—pink	5 0	8 0
—bronze	5 0	8 0
—red	4 0	5 0
—spray, bronze, per doz. bun.	30 0	36 0
—spray, pink, per doz. bun.	30 0	36 0
—spray, yellow. per doz. bun.	30 0	36 0
—spray, white, per doz. bun.	24 0	30 0
Croton leaves, per doz.	1 9	2 6
Daffodils, Golden Spur, per doz. bun.	27 0	30 0
Fern, French, per doz. bun.	10 0	12 0
Forget-me-not, per doz. bun.	12 0	15 0
Freesia, white, Special, per doz. bun.	12 0	18 0
—	3 6	4 0
French flowers—		
—Acacia (Mimosa), per doz. bun.	12 0	15 0
—Narcissus, Paper White, per doz. bun.	3 6	4 0
—Violets, Parma, large, per bun.	—	—
—Ruscus, green, per pad	6 0	7 0
—Anemones, mixed, doz. bun.	12 0	15 0

	s. d.	s. d.
French flowers—		
—Ranunculus, carmine, per doz. bun.	8 0	9 0
— — Barbaroux, per doz. bun.	6 0	9 0
—Marguerite, yellow, per doz. bun.	2 6	3 0
—Violets, single, per doz. bun.	2 6	3 0
Gardenias, per doz. blooms	—	15 0
Heather, white, per doz. bun.	—	12 0
Hyacinths, Roman, per doz. bun.	18 0	21 0
—large white, per doz spikes	4 0	5 0
Lilac, white, per doz. sprays	6 0	8 0
Lilium speciosum album, per bun.	6 0	7 0
—short, per doz.	5 0	6 0
—rubrum, long, per bun.	6 0	7 0
—short, per doz.	3 6	4 0
—longiflorum, long, per bun.	7 0	7 6
—short. per doz. blooms	6 0	7 0
Lily-of-the-Valley, per doz. bun.	30 0	36 0
Marigolds, per doz. bun.	3 0	4 0
Myrtle, green, per doz. bun.	1 6	2 0
Narcissus Soleil d'Or, per doz. bun.	10 0	15 0
—Paper White, per doz. bun.	12 0	15 0
Orchids. per doz.		
—Cattleyas	21 0	30 0
—Cypripediums	8 0	10 0
Roses, per doz. blooms—		
—Columbia	10 0	15 0
—Richmond	12 0	15 0
—Madame Butterfly	12 0	15 0
—Madame Abel Chatenay	5 0	6 0
Smilax, per doz. trails	3 0	4 0
Tulips, per doz. bun.—		
—Single white	21 0	30 0
— — yellow	24 0	30 0
— — red	18 0	30 0
— — pink	30 0	42 0
— — terra cotta	31 0	36 0
— — mauve	36 0	48 0
Violets, per doz. bun.	4 0	6 0

REMARKS.—Business in this department has been rather dull since Christmas Eve, probably because of the severe weather experienced; supplies have also been somewhat limited and very uncertain. Violets are very scarce. Carnations and Roses have remained firm in price. Lilium longiflorum sells at a higher figure than for some time past. Disbudded white Chrysanthemums are ample for present requirements, and bunch spray white (Heston White) is more in demand than the coloured sorts, which begin to show signs of finishing. Winter Cheer (pink) is fairly plentiful. The best disbudded blooms are: white, Cheshunt White and Favourite; bronze, Amber and Holbeck; yellow, Winton and Negoya Daffodils, Narcissus Soleil d'Or, and Tulips are increasing in quantity almost daily; the last include some very good blooms of William Copland. White and mauve Lilac is now arriving in excellent condition from Holland. With the exception of Smilax, all foliage is much firmer in price, including Asparagus plumosus, A. Sprengeri and Maidenhair Fern. Small consignments of white and yellow Narcissi are now coming to hand from Guernsey and the Scilly Isles. From Monday 26th to Friday the 30th, no flowers had been received from France, and supplies are still very limited. Acacia (Mimosa), Narcissus Paper White and Violets have arrived, and these blooms are in the best condition. Larger consignments are expected for this week, and all blooms should arrive in a better condition, such as Anemones, Ranunculuses, Roses, Marguerites, Marigolds and Parma Violets.

Fruit: Average Wholesale Prices.

	s. d.	s. d.
Apples, English—		
—Newton Wonder	4 0	8 0
—Lane's Prince Albert	4 0	8 0
—Bramley's Seedling	4 0	10 0
—Other cookers	3 0	6 0
—Cox's Orange Pippin, per case	20 0	35 0
½-sieve	6 0	15 0
Apples, American—		
—Newtowns	12 0	13 0
—King David	12 0	14 6
—Washington	12 0	15 0
—Jonathan	12 0	15 0
—Delicious	12 0	15 0
—King's	3 0	5 0
—York Imperials, per barrel	28 0	30 0
—Winter	12 0	13 0
—Banana	—	—
—Oregon, Newtown Pippin	15 0	17 0
Apples, Nova Scotian—		
—Cox's Orange Pippin, per ½-barrel	26 0	30 0
—Greenings	16 0	24 0
—Ribston Pippin, per barrel	18 0	24 0
—Wellington	22 0	26 0
—Russet	26 0	30 0
—British Columbian—		
—Jonathan	13 0	14 0

	s. d.	s. d.
Apricots, South African, per box	6 0	10 0
Bananas	16 0	24 0
Grape Fruit—		
—Blue Goose	—	30 0
—Dominica	20 0	25 0
—Jamaica	—	22 6
—Florida	—	25 0
Grapes, English—		
—Alicante	1 6	2 6
—Colmar	1 6	3 0
—Muscat	5 0	10 0
—Canon Hall	6 0	8 0
Lemons, Messina. per case	25 0	35 0
—boxes	9 0	14 0
Nuts—		
—Cobs	1 3	1 6
—Walnuts, Grenoble, per bag	8 0	9 0
—Chestnuts, Italian, bag	25 0	40 0
Oranges, per case—		
—Valencias (Spanish)	18 0	35 0
—Jamaica	—	18 0
—Jaffa	13 0	14 0
—Tangerines	1 0	2 2
Peaches, South African, tray	5 0	12 0
Pears—		
—Doyenné du Comice, per doz.	4 0	8 0
—Oregon Comice, case	17 0	24 0
Pines, per case	25 0	36 0

Vegetables: Average Wholesale Prices.

	s. d.	s. d.
Asparagus, Devon	8 0	10 0
—Paris Green	10 0	12 0
—Sprue	1 6	2 0
—"National"	—	20 0
Beans, Madeira, per box	3 0	8 0
—Guernsey, finest, per lb.	4 0	8 0
—ordinary	2 0	3 0
Beets	6 0	8 0
Brussels Sprouts, ½-bag	6 0	8 0
Carrots	6 0	7 0
Cauliflower, per crate	12 0	16 0
Celery (washed), per doz. fans	18 0	30 0
Cucumbers, each	2 6	4 6
French Endive, per doz.	3 0	4 0
Batavian, per doz.	3 0	4 0
Leeks, per doz.	3 0	3 6
Lettuce, French, round, per doz.	3 0	4 0

	s. d.	s. d.
Mint, forced, per doz. bun.	4 0	10 0
Mushrooms—		
—Cups	2 0	3 0
—Broilers	1 6	2 0
Onions—		
—Dutch	7 6	8 6
—Spanish	13 0	15 6
Parsnips, cwt.	4 0	5 0
Peas, Guernsey, per lb.	2 0	6 0
Potatos—		
—English, cwt.	5 0	8 0
—Guernsey, new, per lb.	0 7	1 3
—Azores, case	10 0	20 0
Tomatos, English—New Crop—		
—pink	8 0	12 0
—pink and white	8 0	14 0
—white	4 0	6 0
Tomatos, Canary Islands	10 0	12 0
Turnips, per cwt.	3 6	4 0

REMARKS.—The usual quiet conditions have ruled in the market during the period following Christmas. The volume of produce available has not been heavy, but ample for the demand. Apples are a slow trade, as also are Oranges, and these fruits feel the reaction of the after-holiday demand rather severely. English Grapes are selling fairly well in spite of the comparatively poor demand for hothouse Grapes from the Continent. Peaches and Apricots from South Africa have sold quite well, but the quantities are on the light side.

The severe weather has brought about a shortage of vegetables, both forced and outdoor. Salads, mainly from France, have been scarce and dear. Mushrooms, which usually at this season are in poor demand, have moved out moderately well. New Potatos from Guernsey have met a good inquiry, but those from other sources are not selling particularly well. The old Potato section reports slightly shorter supplies, with values remaining the recent level.

GLASGOW.

Following on the Christmas activity, business was much quieter during the last week of the Old Year, when prices showed a reaction to levels that favoured buyers. Chrysanthemums are now approaching the end of their season, and realised the following prices:—Favourite and Balcombe Beauty, 2s. to 2s. 6d. for 6's; Niveus, 1s. 3d. to 1s. 6d.; Baldock's Crimson, 1s. to 1s. 6d.; Cheshunt White, 9d. to 1s. 6d.; Winter Cheer, 8d. to 1s. 6d.; specials, 2s. to 2s. 6d.; Wilcox, 1s. to 1s. 3d.; and Heston White, 8d. to 1s. 4d. Tulips were more plentiful at 1s. to 1s. 3d. (6's) for Thomas Moore and Brilliant; 2s. to 2s. 6d. for William Copland; 1s. 3d. to 1s. 9d. for Mon Tresor; and 1s. 6d. to 1s. 9d. for Le Matalas. Hyacinths made 9d. to 1s. for 3's, and specials, 1s. to 1s. 6d. Daffodils were worth 3s. per bunch for Golden Spur, and 1s. 6d. to 1s. 9d. for Princeps; while blue Irises made 1s. 6d. per bunch of 6's. Carnations were cheaper at 6s. to 8s. per dozen; and Lilium longiflorum at 6s. to 8s. per bunch. Tulips and Ferns in pots were slow to move at 1s. 6d. each, and Heaths in pots kept steady at 2s. 9d. to 3s. each.

The fruit market was unusually quiet for the season of the year. Price movements of Apples were irregular. Winesaps were disposed of at 16s. per case; Rome Beauty, 10s. to 12s. 6d.; Oregon Newtown Pippins, 16s. to 20s.. Delicious, 13s. 6d. to 16s.; Canadian Greenings, 34s; to 40s. per barrel; Spies, 45s.; York Imperial, 28s. to 32s.; Baldwin and Starks, No. 1, 30s.; and Scotch Winter, 25s. Winter Nells Pears, 27s. 6d. per case; Beurré Bosc, 18s. per box; Jaffa Oranges, 14s. to 16s. per case; Valencia, 300's, 12s. 6d. to 17s.; 420's, 17s. to 24s.; special, 26s. to 30s.; 240's, 18s. to 20s.; 360's and 504's, 8s. 6d. to 11s. 6d.; Mandarin, 1s. to 1s. 9d. per tray; Grape Fruit, 16s. to 22s.; home-grown Grapes, 3s. to 4s. per lb.; Belgian Colmar, 1s. 4d. to 1s. 10d.; Apricots, 8s. per tray; South African Peaches, 12s. 6d. per box; Plums, 5s. to 6s.

In the vegetable section, Cauliflowers averaged 7s. per dozen; Lettuce, 2s. to 3s.; Endive, 3s. to 4s.; Chicory, 3d. to 4d. per lb.; Mushrooms, 2s. to 2s. 6d.; Teneriffe Tomatos, 14s.; special, 22s.

CATALOGUES RECEIVED.

Seeds.

TILLIE, WHITE AND BENVIE, Edinburgh.

ARMY AND NAVY CO-OPERATIVE SOCIETY, LTD., 105, Victoria Street, S.W.1.

ALFRED DAWKINS, 408, King's Road, Chelsea, S.W.10.

FISHER, SON AND SIBRAY. LTD., Handsworth, Sheffield.

STEPHEN BENSON, Charfield Nursery, Charfield, Gloucester.

DOBBIE AND CO., LTD., Edinburgh.

WATKINS AND SIMPSON, LTD., 27, Drury Lane, W.C.2. (Wholesale.)

T. SMITH, Daisy Hill Nursery, Newry.

CHARLES SHARPE AND CO., LTD., Sleaford, Lincs.

THOMPSON AND MORGAN, Ipswich.

COOPER, TABER AND CO., LTD., 90, Southwark Street, S.E.1. (Wholesale).

HURST AND SON, 152, Houndsditch, E.1. (Wholesale.)

J. C. WHEELER AND SON, LTD., Gloucester.

B. REID AND CO., 72, Guild Street, Aberdeen.

W. DRUMMOND AND SONS, LTD., Stirling.

DANIELS BROS., LTD., Norwich.

Plants, etc.

WILLIAM ACWORTH, The Donnystone Nurseries, Chobham, Surrey.—Shrubs, Conifers, etc.; hardy herbaceous plants, rock plants, etc.

D. G. PURDIE, 6, Waterloo Street, Glasgow.—Seed Potatos.

R. F. CALVERT, Carnsulan Nurseries, Coverack, Cornwall.—Daffodils. (Wholesale.)

H. SCOTT AND SONS, Woodside, South Norwood, S.E.—Horticultural sundries.

Foreign.

WILHELM PFITZER, 74, Militarstrasse, Stuttgart.—Seeds.

USINE DU VEXIN, 4, Rue Claude-Decaen, Paris.—Glass-houses and frames.

RICHARD MEISERT, Konnern a. d. Saale, Province Sachsen.—Seeds.

CONYERS B. FLEU, Jr., Germantown, Philadelphia, U.S.A.—Seeds.

CARL BECK AND CO., Quedlinburg a. H., Germany.—Seeds.

F. C. HEINEMANN, Erfurt, Germany.—Seeds.

GARDENING APPOINTMENTS.

Mr. Neil McMullan, for the past two years Gardener and Estate Overseer to the late GEORGE TODD, Esq., of Trochrague, Girvan, Ayrshire, as Gardener to the MARQUIS OF BLANDFORD, at Lowesby Hall, Leicester. (Thanks for 3/- for R.G.O.F. Box.—EDS.)

Mr. George Anderson, for the past eighteen years Gardener to the EARL OF BALFOUR, Whittingehame, East Lothian, as gardener to C. W. DYSON PERRINS, Esq., Davenham, Malvern.

Mr. E. Percy Burnand, for the past eighteen months Gardener to S. J. THORPE, Esq., Coombe Glen, Kingston Hill, and previously for two-and-a-half years Foreman to Messrs. A. LUFF AND SONS, Landscape gardeners, as Gardener to the SURREY COUNTY COUNCIL SANATORIUM, Milford, Surrey.

THE
Gardeners' Chronicle
No. 2142.—*SATURDAY, JANUARY* 14, 1928.

CONTENTS.

Alpine garden—
  Campanula petraea 25
  Hutchinsia alpina ... 24
  Ranunculus parnassifolius 25
  Stellaria radicans ... 24
Birds and fruit ... 33
Books, notices of—
  An Austrian Florists' Directory ... 30
  Fertilisers and Soil Improvers ... 30
  Hardy plants ... 30
  Winter Botany ... 30
British Ecological Society 20
Bulb garden—
  Narcissus serotinus 24
  Pancratium illyricum 24
Calderhead, Mr. D. ... 20
Chiswick, gardening lectures at 21
Corypha Utan ... 27
Elm disease in England, the occurrence of the Dutch ... 31
Erodiums 34
Formal garden exhibit at Pretoria 34
Fruit garden, the market 32
Fruit trees on their own roots 32
" Gardeners' Chronicle" seventy-five years ago 21
Ginkgo biloba, foliar anomalies of ... 28
Gladiolus 20
Hardy flower border—
  Fuchsia reflexa ... 25
  Physostegias ... 25
  Sedum spectabile ... 25
  The Double Dark Sweet William ... 25
International Exhibition of Garden Design 19
Iris garden—
  Bearded Irises in Winter 24
Kew, the floods at ... 20
Obituary—
  Roberts, Mrs. J. ... 35
  Tayler, W. ... 35
Potato trials in 1927, Lord Derby Gold Medal 19
Rose garden—
  The old Double Yellow Scotch Rose 25
Sitka Spruce in British Columbia, damage to 26
Societies—
  Economic Biologists 35
Trees and shrubs—
  Leptospermum scoparium Nichollii... 26
  Robinia Pseudacacia 26
  Taxodium distichum 26
Vegetable garden—
  Lettuce 33
Ward's, Mr. F. Kingdon, ninth expedition in Asia ... 28
Week's work, the ... 22

ILLUSTRATIONS.

Apple trees on their own roots: method of producing 32
Calderhead, Mr. David, portrait of 20
Corypha Utan in the Buitenzorg Botanic Gardens, Java 26, 27
Dutch Elm disease 31
Formal Garden Exhibit at Pretoria 34
Narcissus serotinus in Spain 24
Ranunculus parnassifolius 25
Ward's, Mr. F. Kingdon, ninth expedition in Asia: views of 29

Average Mean Temperature for the ensuing week deduced from observations during the last fifty years at Greenwich, 39·2.

Actual Temperature—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London, Wednesday, January 11, 10 a.m. Bar. 30. Temp. 43°. Weather, Wet.

Lord Derby Gold Medal Potato Trials, 1927.

As in previous years, the 1927 Gold Medal Potato Trials were carried out under the control of the National Institute of Agricultural Botany, at the Potato Testing Station, Ormskirk. Since, normally, each entry is tested for one year only—and that at a single centre—the trials, in spite of the extreme accuracy of the method of test employed, cannot be expected to do more than fulfil the purpose for which the award was designed, namely, to indicate which of the newer varieties of Potato, when grown at Ormskirk, show promise of outstanding merit. The public should realise that although there is no doubt that wider deductions will often show justification in the light of after experience, such deductions can only be drawn without authority from the Committee making the awards. As stated in previous reports, the decisions of the Committee are based, not merely on yield, but also on such features as shape, vigour, type of haulm, etc., which have been shown in the past to have very considerable influence on the popularity of varieties in commerce. Varieties which appear likely either to satisfy requirements left unsatisfied by those already established in public favour, or which show signs of superiority in one direction or another over varieties at present in cultivation, are awarded a Gold Medal. Certificates of Merit are sometimes awarded to varieties of good, but not superlative promise. Eleven entries were received in 1927, which is a gratifying increase over previous trials. They were as follow:—Aberdeen Favourite—immune maincrop, white round tubers, from Messrs. Sutton and Sons, Reading; Argyll Favourite—immune second early, white, round to oval tubers, from Messrs. Sutton and Sons, Reading; Arran Banner—immune maincrop, white, round tubers, from Mr. D. MacKelvie, Lamlash, Isle of Arran; Claymore—immune maincrop, white, round tubers, from Messrs. D. and W. Croll, Dundee; Doon Star—immune maincrop, white, oval tubers, pale lemon flesh, from Messrs. McGill and Smith, Ayr; Duke of Perth—immune late, white, oval tubers, from Mr. G. H. Young, Meigle; Incomer—immune late, white, oval tubers, from Messrs. Dobbie and Co., Ltd., Edinburgh; Macbeth's Castle—immune (maturity not finally determined, but apparently an early), white, kidney-shaped tubers, from Mr. A. Christie, Balbeggie, Perthshire; The Baron—immune second early, white oval tubers, from Messrs. Wm. Tasker and Sons, Meigle; The Bounty—immune maincrop white, round tubers, pale yellow flesh, from Messrs. Wm. Tasker and Sons, Meigle; and The Boxer—immune late, white, round tubers, from Messrs. Wm. Tasker and Sons, Meigle. Great Scot—immune second early, white round tubers; Majestic—immune maincrop, white, kidney-shaped tubers; Kerr's Pink—immune late, light, pink-skinned, round tubers; and Ally—immune second early, white, oval tubers, were used as controls. Planting took place on April 21. A very serious and universal attack of Late Blight cut down the foliage of all varieties prematurely; consequently no precise determination of the number of days taken by varieties to mature was possible. With the exception of Macbeth's Castle and Aberdeen Favourite, which matured first, and Incomer and Kerr's Pink which matured last, no real discrimination could be made between the times of ripening of the varieties. Lifting took place between August 24 and September 19, and the weights and produce were analysed statistically. Statistical handling gauges the reliance which may be placed on recorded differences. Only differences exceeding a certain calculated amount can be regarded as worthy of consideration, and are termed "significant." In the present trial, Arran Banner (total crop, 14·9 tons per acre) beat all varieties except Ally and Kerr's Pink significantly. Ally, a control variety (total crop, 14·1 tons), beat all except Arran Banner, Kerr's Pink and Majestic significantly. Kerr's Pink, a control variety (14·1 tons), beat all except Arran Banner, Ally and Majestic significantly. Majestic, a control variety (13·8 tons), beat all except the above three and The Baron significantly. The Baron (13·0 tons), Claymore (12·7 tons), Great Scot, a control variety (12·7 tons), Incomer (12·5 tons), and The Bounty (12·5 tons) all beat Duke of Perth, Macbeth's Castle, The Boxer and Aberdeen Favourite significantly. Argyll Favourite (12·3 tons), Doon Star (12·3 tons), Duke of Perth (11·5 tons), and Macbeth's Castle (11·4 tons) beat The Boxer and Aberdeen Favourite significantly. The Boxer (10·4 tons) and Aberdeen Favourite (9·9 tons) beat no other variety significantly. The yield of ware differed little from that of total produce. Arran Banner still retains first place. The position of Incomer and Doon Star are slightly improved, while The Baron, Claymore and The Bounty are less favourably placed. With the exception of The Boxer (7·25 per cent), Ally (5.0 per cent), Aberdeen, Favourite (3·75 per cent.), and Doon Star 3.0 per cent), the number of "misses" was negligible. As regards virus diseases, those varieties most affected were: Aberdeen Favourite, with 36 per cent. secondary Leaf-roll and 5 per cent. Mosaic, and Argyll Favourite, with 14 per cent. severe Mosaic. Blight was universal, and there was little evidence of special resistance in the case of any variety. The Gold Medal Committee met on three occasions and examined the growing plants and the lifted produce. Arran Banner was awarded a Gold Medal. The Committee's note on this variety, and its description, are as follows:—One of the most promising sorts which have so far been entered for the Derby Medal. Even, regular appearance while growing, and has an attractive type of haulm. In this trial it was apparently free from any form of secondary virus infection. The roots lifted very evenly. The eyes of the tubers are inclined to be deep at the rose end. Sprouts, pink. Tubers, round, slightly flattish. Skin white. Flesh white. Eyes medium, deeper at the rose end. Haulm and foliage, tall, open, upright. Leaflets medium grey-green, soft, wrinkled and of dull appearance, medium size, roundish; leaf open. Stems green with slight bronzing in the axils; wings straight; secondary leaflets large. Flowers, none observed; buds pink. Maturity, maincrop. The Baron, Claymore, Incomer, Doon Star and Macbeth's Castle, although not worthy of any award on this year's evidence, were considered to give indications of merit and the Gold Medal Committee is prepared to accept their entry for the 1928 trials. An exhaustive report on the trial, with full descriptions of all the varieties, will be published at an early date in No. 7 of the *Journal* of the National Institute of Agricultural Botany.

International Exhibition of Garden Design and Conference of Garden Planning.—The Council of the Royal Horticultural Society is organising an international exhibition of Garden Design—an International Exhibition of Garden Design and a Conference of Garden Planning, to be held on October 17 to October 24. The Royal Institute of British Architects, and the Royal Society of British Sculptors are acting in co-operation, and have appointed representatives on the General Committee. The General Committee of the Exhibition and Conference consists of:—Sir William Lawrence, Bt. (Chairman), Mr. E. Cheal, Mr. F. J. Chittenden, F.L.S., V.M.H., Mr. R. Cory, Mr. Mark Fenwick, Mr. G. H. Jenkins, F.R.I.B.A. (representing the R.I.B.A.), Mr. E. P. Mawson, F.R.I.B.A., M.T.P.I., Mr. W. Reynolds-Stephens, P.R.B.S. (representing the R.S.B.S.), Mr. H. Avray Tipping, Mr. R. W. Wallace, V.M.H., Sir Lawrence Weaver, K.B.E., and Mr. E. White, V.M.H. The Exhibition will be divided into four sections:—(1) Retrospective Historical Section up to 1850, with a Sub-Committee consisting of:—Mr. H. Avray Tipping (Chairman), Mr. E. Hudson, and Mr. C. Hussey. (2) Garden Planning for Town and Country, with a Sub-Committee consisting of Mr. Mark Fenwick (Chairman), Mr. L. Pearson, F.R.I.B.A., Mr. R. Cory, The Hon. R. James, and Mr. Guy Fenwick. (3) Sculpture for Gardens, and its Setting, with a Sub-Committee consisting of Mr. W. Reynolds-Stephens (Chairman), Mr. Gilbert Bayes, F.R.B.S., and Mr. W. Reid Dick, A.R.A., F.R.B.S. (4) Public Parks and Gardens, with a Sub-Committee consisting of Mr. E. White, V.M.H. (Chairman), Mr. W. W. Pettigrew, V.M.H., Mr. R. W. Wallace and Mr. E. P. Mawson; and a Conference Committee consisting of Sir William Lawrence, Bt., Sir

Lawrence Weaver and Mr. F. J. Chittenden. The Exhibition will be one of selected plans, designs, models and garden sculpture. The Council asks all garden designers and persons interested in garden planning and who may wish to exhibit or take part in the Conference to communicate with the Secretary of the Royal Horticultural Society, Vincent Square, S.W.1. Eminent garden designers and architects of the Dominions and of foreign countries are being invited to send representative examples of their country's work for exhibition, and to take part in the Conference. The Exhibition and Conference will be held in the Society's New Hall.

New, Late-flowering Chrysanthemums.—The Floral Committee of the National Chrysanthemum Society will meet at the Royal Horticultural Society's Hall on Monday, January 16, at 3.15 p.m., for the purpose of considering the merits of any new, late-flowering Chrysanthemums that may be submitted. Several novelties are anticipated, and any growers who have useful, new, late-flowering sorts should send them to this meeting, as there is room for first-rate, new, late-flowering Chrysanthemums.

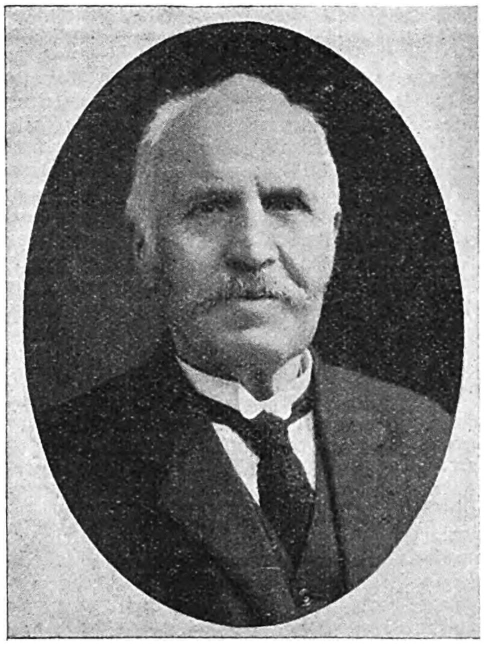
Qualification of a Park Superintendent.—A meeting of the Association of Parks and Botanic Gardens Superintendents will be held in the Lecture Room of the R.H.S. Hall, Vincent Square, on Tuesday, January 17, when an address will be given by Mr. F. W. Parker, F.S.I., Second Officer, Parks Department, London County Council, on "The Qualifications of an Ideal Park Superintendent." The chair will be taken at 7.0 p.m. by Mr. A. J. Ashmore. Park Superintendents, Curators of Botanic Gardens and their assistants will receive a hearty welcome and be invited to take part in the discussion.

Gladiolus. — The next Horticultural Club Dinner will be held on Tuesday, January 17, at 6.30 p.m. for 7 p.m., in the St. Ermin's Hotel, Westminster. Following the dinner, Major George Churcher will deliver an address on "Gladiolus," illustrated by lantern slides.

The Floods at Kew.—Happily, the floods at Kew, though widespread, did not result in any loss of life as, so unfortunately, happened in London. Last Saturday morning the residents in a wide area awoke to find the cellars and ground floors of their houses flooded, with deplorable effect to their carpets and furniture. Mild flooding round about the Kew pond is nothing exceptional but, on the present occasion, the western section and most of the eastern part of Kew Green became a huge lake of flood-water. The wood-paving in the main road was lifted up into fantastic forms and traffic is still diverted around a "loop way" in front of the Main Entrance to the Royal Botanic Gardens. Fortunately, the Gardens escaped the floods. The Ha-Ha by the riverside was filled, but did not overflow. For a time, the Herbarium seemed to be in some danger, but while some water entered the stoke-hold it was not sufficient to cause any material damage. Next door, at the official residence of Mr. W. Dallimore, the Keeper of the Museums, the cellars were filled with water and the garden was flooded.

British Ecological Society. — The annual meeting of the British Ecological Society was held in the New Botanical Department of the Birmingham University, on January 7. Dr. E. J. Salisbury was elected President, Mr. H. Boyd-Watt, Vice-President, and the vacancies on the Council were filled by Professor A. E. Boycott and Dr. V. E. L. Anderson. The Hon. Treasurer stated that the Society was in a better financial position than ever before, and a further £200 had been invested. The Hon. Secretary reported that the Council had recommended the preparation of a Biological Flora of Britain, which would contain such information as was available with regard to biological features of ecological significance. A scheme prepared by Dr. Salisbury was approved, and the recommendation of the Council that Dr. Salisbury should act as Editor was adopted. Mr. Turrill reported that experiments on growing selected plants in various soils had been started at Pottern under the direction of a sub-committee consisting of Dr. A. W. Hill, Professor Oliver, Dr. Salisbury, Professor Tansley and Mr. Turrill. Papers were communicated by Mr. C. S. Elton on "Annual Communities in the Arctic;" by Mr. W. Leach, on "The Vegetation of Screes;" by Miss M. K. Bishop on "The Ecological Relationship Between some Species of Juncus"; by Professor F. W. Oliver on "Early Stages of a Sand-dune"; by Dr. V. E. L. Anderson on "The Root-hair in the Soil"; by Dr. W. H. Pearsell on "Michigan Sand-dunes;" and by Professor Adamson on "The Vegetation of Eastern Rhodesia."

Mr. David Calderhead.—The many friends of Mr. David Calderhead will be interested to learn that he has now retired from the position of Manager to Messrs. William Thomson and Sons, Ltd., Tweed Vineyards, Clovenfords, which he has held for the long period of forty-four years. During that time he has given most devoted service to his employers. He carried on the famous Vineries with much credit to himself, and maintained the high standard of production for which this establishment is so famous. Mr. D. Calderhead is a well-known personality and has trained many reliable gardeners, many of whom have risen to eminent positions in the gardening world. He is also well-known and much esteemed for his courteous and kindly manner by the hundreds of visitors from all over Great Britain and abroad who visit the Tweed Vineyards every year. Mr. Calderhead is a native of Fife, and served his apprenticeship at Pitfirrane Gardens, gaining further experience at Elderslie and Blythswood (Renfrewshire), Mount Annville Park, Dublin, and The Kilns, Falkirk; he also spent three years as head gardener at Wemyss Castle, before going to the Tweed Vineyards. While at Wemyss Castle he won several prizes for Grapes, Peaches and Pineapples at the Edinburgh shows. He is held in high regard both by the Directors of Messrs. Thomson and Sons, and by the members of the family of whom he has known four generations, and he has been the recipient of handsome gifts from them as a token of their esteem. He continues to enjoy good health, and has built a house in Clovenfords, quite near his old quarters, where it is hoped Mrs. Calderhead and he may enjoy many years of well-earned retirement. Mr. Calderhead is succeeded as Manager at Tweed Vineyards by Mr. John Melrose, late gardener to Dyson Perrins, Esq., Davenham, Malvern.



MR. DAVID CALDERHEAD.

Effects of the Recent Gale at Nymans.—Mr. J. Comber, Nymans Gardens, Handcross, Haywards Heath, writes:—"The snowstorm and gale which began in the early hours of December 26, 1927, and continued intermittently during the following day, proved disastrous to trees and shrubs in these gardens. An attempt was made early in the morning to relieve the lower boughs, but the snow, soft at first, had later frozen on them, and as the twigs were embedded in icy snow, its removal was impossible Snow that came later did not freeze so quickly, and some of this was shaken off. Shrubs of six to eight feet in height were bowed to the ground beneath the weight, and finding support, sustained but little damage. The tops of both evergreen and deciduous trees were early covered with snow and ice, much heavier than ordinary snow; the ground, too, was in a saturated condition, giving far less root hold than usual; under such circumstances it is no wonder that the fierce north-east gale caused many casualties. Abies lasiocarpa, with a two-feet trunk, was snapped off at six feet above the ground; Pinus insignis, planted in 1898 (when about two feet in height) was uprooted; it measured seventy-two feet in height; Cedrus atlantica argentea, forty feet high, was so badly broken that it must be destroyed. Fine specimens of Crataego-Mespilus grandiflora and Nyssa sylvatica were split in half, nor did the native trees fare much better, the long, spreading branches of a large Oak, more brittle for some reason than most of its kind, gave way and crashed on the shrubs below; indeed, falling timber added much to the general damage. Curiously, all the newer and more tender Rhododendrons practically escaped, perhaps because they were lower and more sheltered. Contrary to past experience, those trees exposed to the wind have suffered most; in other circumstances the sway of the branches has usually dispersed the snow. The Eucryphias, although easily broken, have only lost a small bough or two. Standard Apples and Pears have been uprooted or had large branches torn off. In the older parts of the grounds are many ancient seedling Rhododendrons, probably some of the first hybrids raised between R. ponticum and the North American species. Planted much too thickly eighty years ago, they have stood like a grove of trees, about twenty feet in height; the weight of the snow added to the wind pressure was, however, too much for them, and they were bowled over like ninepins. Heaths, especially Erica australis and E. arborea, now about thirty years of age, are naturally somewhat large and stiff, and as a consequence have been badly splintered. Trees of Arbutus Unedo, a species always liable to damage, are broken down. Among the more notable exceptions to the general destruction are two fine specimens of Pinus patula and Picea Morinda; probably the drooping character of their leaves and branchlets saved them. Two famous gardens, Leonardslee and Wakehurst Place, both report damage to trees and shrubs. In most cases the size of the specimens placed manual help out of the question, to say nothing of the immovability of the snowy ice on the branches. The advice given in a recent issue of *The Gardeners' Chronicle* to shake the snow from the branches with long poles, is sound enough so far as it is possible. But snow falls as frequently by night as by day, and the damage is often an accomplished fact at daybreak. Even by day, many of the most important branches of trees are out of reach. What other measures then, can we adopt to lessen the risk? (1) Avoid two leaders to a tree, as one or both are sure to split out under pressure; (2) shorten the longest boughs occasionally to lessen the leverage; (3) place a few cartloads of soil around trees that are suspected of being shallow rooted, it will only mean a good top-dressing at most, but may be just enough to secure the stability of the tree. A cousin of mine who has travelled considerably, writes that many of the most famous trees in Japan are winter-rigged with rough ropes, from the central stem to the branches, to prevent damage by snow. However effective this may be, the expense of such work would render its adoption, except for rare trees, impossible in England."

Rainfall at Tirley Garth, Tarporley, in 1927.—For the year 1927, the rainfall at Tirley Garth amounted to 36·51 inches, or 2·86 inches more than in 1926. The heaviest rainfall during twenty-four hours occurred on August 17, when 1·02 inch was registered. December was the driest month, with only 1·36 inch, consisting chiefly of melted snow. In September, the rainfall amounted to 5·35 inches, and this was the wettest month in the year, with twenty-one rainy days. There were 221 days on which ·01 of-an-inch, or more of rainfall was registered, and 174 days on which ·04 or more was registered. The driest period was from November 30 to December 13, when there were thirteen clear, dry days. The hottest days were those of August 4 and 5, when the temperature each day rose to 79° in the shade. The coldest day was on December 18 when 16° of frost was registered.

Unwanted War Trophies.—The Parks Committee of Manchester has decided that the war relics which have been placed in the various public parks and open spaces of the city are "useless" and "repulsive," and has recommended that they shall be scrapped and sold as old metal. A recommendation to this effect will shortly be considered by the Corporation.

Gardening Lectures at Chiswick.—A series of four horticultural lectures will be given at the Chiswick Public Library during the month of February. The lectures, which are free, will commence at 8 p.m., and are as follow:—February 7: "The London Garden made Beautiful," by a representative of the London Gardens Guild; February 14: "The Cropping of an Allotment," by Mr. W. L. Lavender; February 21: "The Small Rock Garden"; and February 28: "The Herbaceous Border," by Mr. John Weathers.

Flavour Test with American Apples.—An interesting experiment, intended to determine the relation of colour to flavour in Apples, is recorded in the *U.S.A. Science Service*. The experiment was conducted by Mr. Roger B. Corbett, of the Rhode Island State College, who had as coadjutators eleven men of different grades and callings, such as bankers, lawyers, mechanics and farmers. Mr. Corbett selected four varieties of Apples popular in the United States, and of these Rome Beauty was placed first, when judged for appearance. The four varieties were then peeled and tasted, when the majority placed Rome Beauty last. First place, for flavour, was given to McIntosh, with Baldwin second and Rhode Island Greening third.

Nepeta Mussini in Sweden.—An indication of the widespread popularity of the useful Nepeta Mussini comes from Sweden, whence a correspondent has sent us a photograph (Fig. 12) showing the use of this Cat Mint as an edging for a small flower border in front of a villa garden. Although N. Mussini is a comparatively new garden plant, it is really an old species, as it flowered at Kew so long ago as 1803, and is figured in the *Bot. Mag.*, t. 923, the plate being dated April 1, 1806.

Guinea Pigs and Apples.—A number of guinea pigs are now being fed on Apples sent to the Lister Institute from different parts of the world to ascertain the health value of each variety. The experiments are under the direction of Dr. S. S. Zilva, the vitamin expert, as part of the work for which the Empire Marketing Board has made a grant of £3,000 for five years in order that public knowledge of the vitamin content of the Apple may be as exact as it is for the Orange and various vegetables. The Apple ration of each guinea pig will be reduced to the minimum required to provide a certain amount of vitamins, and an important part of the test will be to discover any difference between Apples which have been in cold storage and those which have not.

A Market Gardener's Bequests.—It is pleasing to learn of the thoughtfulness of the late Mr. Alfred Cockerill, a market gardener and farmer of Abingdon, Northampton, who left £144,500. Amongst the several bequests he made was one of land and premises to Mr. John Percival, who had been connected with the business for very many years. He also left £800 to his typist, and £200 each to his foreman and to his gardener, together with freehold property. In addition, many other employees received various sums. Mr. Cockerill's generosity was apparent during his lifetime, for we learn that he recently came to the rescue of the Northampton County Cricket Club and cleared off the debt upon its ground.

Destructive Insects and Plant Diseases in Canada.—A public meeting will be held on Tuesday, January 24, at Ottawa, Canada, to consider certain changes in the regulations under the Destructive Insect and Pest Act (Canada). The proposed changes include: (1) The inspection in Canada of nursery stock imported from the United States; (2) The advisability of prohibiting the importation of Elms from Europe, on account of the Elm disease; (3) the advisability of prohibiting the importation of Conifers from Europe on account of the Nun Moth and other noxious insects; and (4) modifications of several regulations already in force.

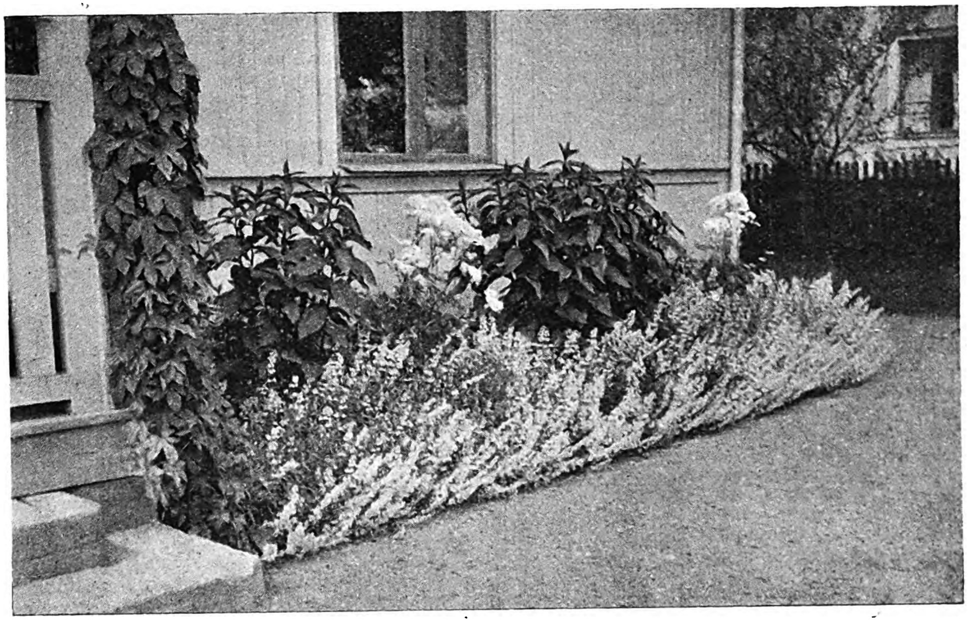


FIG. 12.—NEPETA MUSSINI IN A SWEDISH GARDEN.

Letting by Candle.—It is interesting to learn that the immemorial custom of "letting" the parish meadow by the burning of an inch of candle still obtains at Broadway, Dorset. Last week the letting was performed, with due ceremony, at a meeting of the parish Council, when the inch of candle burnt for sixty-five minutes before it flickered out and the last bidder was declared successful. The rent is used to purchase coals for the poor of the parish.

Less Home-grown Sugar this Year.—The recent severe weather has had its effect on the home-grown Sugar industry. The hard frosts have appreciably reduced the Sugar content of the Beet roots and, it is estimated, that the production of Sugar in Great Britain will be reduced by fifty-thousand tons this year.

Gale Damage to Chestnut Avenue at Hampton Court.—We regret to learn that last Saturday five of the large Chestnut trees in the famous Avenue at Hampton Court were blown down. These are considered to be some of the original trees planted by Cardinal Wolsey, over three hundred years ago.

Appointments for the Ensuing Week.—MONDAY, JANUARY 16: Harrogate Horticultural Association's meeting; National Chrysanthemum Society's Floral Committee meeting; East Anglian Institute of Agrculture's lecture; Burnley Horticultural Society's meeting. TUESDAY, JANUARY 17: Royal Horticultural Society's Committees meet; Winchester Horticultural Society's meeting. WEDNESDAY, JANUARY 18: Royal Society of Arts meeting; Sheffield Chrysanthemum Society's meeting. THURSDAY, JANUARY 19: Ipswich Gardeners' Association's Annual Meeting; Linnean Society's meeting. FRIDAY, JANUARY 20: Orchid Club meeting; King's Lynn Horticultural Society's Annual Meeting; Dundee Horticultural Society's Annual Meeting; Association. of Economic Biologists' Annual Meeting.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Jasminum nudiflorum.*—This beautiful Jasmine is certainly a great acquisition to the flower garden, inasmuch as it produces its cheerful bright yellow flowers during autumn and winter, and continues blooming for several months in succession. It is also very useful for cutting for bouquets, and the "sprigs" will last in water a long time. It may be grown in any common, light soil, and no one fond of a garden ought to be without it, for it does not take up much room. It is best planted against a wall, and kept trained. It is a free-growing plant when it gets established, and is quite hardy. We have a specimen at this place, which has been planted about five years. It is against a south wall about ten feet high, and it is covered with charming yellow flowers from bottom to top. It has been in this condition from the beginning of November, and it appears likely to continue so for a long time to come. When grown in this way it is a truly splendid object. The way we have treated it is as follows:—It was planted out in the spring and kept trained against the wall during summer, giving it a good supply of water at the roots. It made good growth and bloomed the same year. After flowering it was pruned, cutting the side-shoots to one or two eyes, and keeping the leading shoots trained up the wall till they attained the height that was wanted. It has been pruned every year since. Of course, it should not be cut in summer, for it blossoms on the young wood, and the longer the shoots the more bloom you get. It is easily increased by cuttings or layers. In the former case take part-ripened wood and place it in a pot in light soil and sand mixed together, afterwards put them in a warm frame till they are rooted, and then pot them afresh in small pots. Set them in the frame again till they are rooted, then move them to a cooler place till spring, when they may be turned out against a wall and treated as is recommended above. *B. S. Williams, Hoddesdon, Herts. Gard. Chron., January 8,* 1853.

Publication Received.—*Primulas for Garden and Greenhouse*, by E. H. M. Cox and G. C. Taylor; Dulau and Co., Ltd., 32, Old Bond Street, W.1.; price 5s. net.

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven Moore, Manchester.

Ventilation.—Orchids of all kinds delight in a free circulation of air, but discretion must be used in admitting it, especially at this season. Much depends on whether the situation is sheltered or exposed, the size and aspect of the houses, and the type of ventilators used. There is no doubt that the geared, continuous type has a great advantage over the lever and pin arrangements for admitting top air. The bottom ventilators should be fixed so as to allow ample fresh air to pass under the hot-water-pipes. The direction and force of the wind should always be considered and the leeward side of the house chosen for the admission of air. In cool houses, air may be admitted through the bottom ventilators day and night, except during severe frost or dense fog.

Damping Down.—The amount of atmospheric moisture needed at this season depends greatly upon the weather. In moist districts very little damping down is needed during mild weather, especially in the cool houses, where the necessary watering of the plants is often sufficient to keep the atmosphere moist enough; but steps should be taken to correct any dryness in the air during cold and windy weather, as more fire-heat is then needed in all divisions. To counteract the resulting dryness more damping down is necessary, and should be done with a rising temperature, care being taken not to overcharge the air with moisture, and to avoid creating vapour that results when water comes into contact with the hot pipes. This "steam" condenses on the roof during cold weather and often causes drip which, if i comes into contact with the plants, causes serious loss of root and growth, and sometimes the loss of plants. In large houses, where a centre stage is used, it is not advisable to place plants directly under the ridge or the ends of tie rods; drip bars should receive attention, especially after glazing repairs, as they often become clogged with putty. If the glass is cleaned occasionally, as previously advised, it will carry off the condensed moisture quickly.

Watering.—Water should always be supplied to plants at a slightly higher degree than the mean temperature of the house; where the storage tanks are below the ground level, the water will be much below the temperature of the house, therefore means should be taken to raise its temperature before use. Water used at a low temperature causes the compost to remain cold for a considerable time, especially when loam is largely used, as the warm air of the house cannot pass through it quickly; such conditions cause loss of roots at a critical time, and also restricts the action of certain bacteria which are not active below a temperature of 45°. Enough water should be given for the requirement of the plants, avoiding a saturated condition on the one hand, and extreme dryness on the other.

THE KITCHEN GARDEN.

By Allan Falconer, Gardener to the Cheadle Royal Mental Hospital, Cheadle, Cheshire.

Tomatos.—A batch may be raised now, in pots or boxes of sterilised soil; water the receptacles with boiling water, and when the soil has cooled a little sow the seeds about an inch apart and cover them with almost dry, sterilised soil. Place the receptacles in a temperature of 65° to 70°, with a covering of glass to assist germination, removing the glass when the first seed germinates, and raising the pans up to the light to encourage sturdy growth.

Onions for Exhibition.—Seeds of an approved strain should be sown now in a compost of two parts turfy loam, one part leaf-mould, and one part horse manure, with a sprinkling of sand and wood-ash, the whole being passed through a quarter-inch sieve; the soil should be made firm and watered after the seeds are sown. Place the seed-pans in a temperature of 50° to 55°.

Beans in Pots.—Except in favoured districts, January is early enough for sowing French Beans for the first batch. In some districts, successional batches may follow the outdoor crop with success, but in dull, sunless areas they are not satisfactory. A method I have found highly successful is to half-fill eight-inch or nine-inch pots with loam, leaf-mould, and old Mushroom-bed manure; water this with boiling water, sow seven or eight seeds, immediately cover them with soil, and place the pots in a temperature of 60° to 65°. Thin the seedlings to five, top-dress as needed, afford stakes, and confidently expect a good crop in seven or eight weeks from the time of sowing. Syringe the plants on fine days; very little water is required at the roots under this method until the Beans are well advanced. Apply liquid manure when the pods are swelling. Successional sowings may be made every fourteen days, according to requirements. Remove the pods so soon as they are ready; if these are placed in wet sand in a cool place they will keep quite fresh for a week. The climbing French Beans may also be sown at the same time, and if two seeds are sown in three-and-a-half-inch pots, and the plants shifted singly into eight-inch pots when ready, and placed at the back of a stage, the pots almost touching, with strings carrying the vine up to the roof-glass, very little space is occupied. By sowing two seeds in a small pot, subsequently thinning to one, and potting in a mixture as advised for Dwarf Beans, it is remarkable what good returns may be obtained in a short time. The boiling water method induces the seeds to germinate quickly. The laterals should be pinched at the first joint.

FRUITS UNDER GLASS.

By T. Pateman, Gardener to Sir Charles Nall-Cain, Brocket Hall, Hertfordshire.

Vine Propagations.—If it is desired to raise vines with a view to planting a new vinery during the summer months, now will be a suitable time to commence propagation. Unless the young vines are to be planted out early in July, then propagation is best left to the nurseryman, who has better facilities for producing them. On the other hand, where an early vinery is to be replanted, then I strongly advise raising the vines with a view to planting after the crop has been taken from the old vines that are to be dispensed with. Make the eye from one-and-a-half inch to two inches in length, and after splitting the wood in half, insert the portion with the bud in a small pot filled with an open compost containing charcoal. Guard against excessive moisture until the "eye" breaks into growth.

Pot Peaches.—Pot trees which were brought inside during the month of December and kept judiciously syringed with tepid water, will now be swelling up their flower buds, but until these have fully expanded, high temperatures at night, caused by excessive heat from the hot-water pipes, must not be permitted. A somewhat higher temperature on bright days should be encouraged, as a rise caused by solar heat is beneficial to early growth. The best time to syringe the trees is about noon, when the top ventilators should be closed; this will secure a moist, genial atmosphere favourable to the development of flowers and growths. The night temperature during severe weather may fall to 48°, but if the weather is open there may be a rise of several degrees without harm.

Early Peaches.—For the earliest crop of Peaches, I find those that are grown in pots are best as they will produce fruits quite ten days earlier than trees planted out in borders, even though of the same varieties.

Pot Figs.—Fig trees that were placed inside, over a steady bottom-heat, at the beginning of December, will now be swelling their point buds; their advance should be accompanied by a slight rise of the temperature at night and a somewhat moister atmosphere, especially on bright days and during open weather; but should sharp frost occur, it will be wise to guard against over-heating the hot-water pipes, and the temperature may fall to 52° without harm resulting. The pots should be well filled with roots, therefore when growth is developing freely water must be given liberally, and liquid manure frequently.

Melons.—Where ripe Melons are needed in May, seeds should be sown at once. Melon seeds will be found to germinate readily, and the seedlings will be found to grow more freely and make sturdier plants than those that were raised in December. The compost in which the seeds are to be sown should be warmed to the temperature of 70° before any attempt is made to insert them. The receptacles should also be warmed before they are filled with a fairly open compost. I place two seeds near the sides of the pots, plunge the pots in a brisk bottom-heat, and cover them with a sheet of glass. If the compost is fairly moist no water should be given until germination takes place. So soon as the seedling appears, stand them near the roof-glass in a warm house, care being taken to avoid cold draughts. Use a small stick to support each plant. Where a brisk bottom-heat is not available, I have obtained success by plunging the receptacles in a box filled with damp moss, and standing the box immediately over the hot-water pipes. Cucumber seeds will be found to germinate freely if this method is adopted.

PLANTS UNDER GLASS.

By J. Coutts, Assistant Curator, Royal Gardens, Kew.

Hippeastrums.—Where large stocks of the garden varieties are grown, plants may be had in flower over a long period by starting them in successional batches. Those started about the middle of December are now throwing up their flower-scapes, and successional batches should be introduced to a warm house, according to requirements, selecting for this purpose those that were started early last year and do not require repotting. Such plants should receive a thorough soaking at the roots, afterwards removing a few inches of the top soil and applying a rich top-dressing. The pots should then be plunged in a bed of fibre with a bottom-heat of 70° to 80°. When the flower-scapes are well developed, the plants should be removed from the plunge-bed and stood on a bench in the same house; this stiffens them up and fits them for removal, in due course, to a lower temperature in the show house. All Hippeastrums that require repotting should be placed together and dealt with at the one time, as it is then easier to give them correct treatment, for care in watering is of prime importance when dealing with newly-potted bulbous plants. Before repotting or starting Hippeastrums into growth, they should be carefully examined for traces of mealy bug, while all old scales and decayed roots should be removed. Young plants raised from seeds ripened last summer should now be ready for placing in sixty-sized pots; it is, however, a great advantage if the seedlings can be planted in a bed, in a warm house, as they require less attention under these conditions, and make flowering bulbs quickly. Seedlings should be grown steadily without any drying off until they attain flowering size. Mealy bug, thrips and red spider must all be guarded against during the growing season.

Hippeastrum aulicum.—This fine old plant deserves to be more generally grown, for it succeeds perfectly in an ordinary greenhouse, and is a very strong, robust-growing species. A batch of plants is now flowering for the second time within the twelve months. This species should not be dried off at any time, as it is evergreen. It is easily increased by offsets, and as well-grown bulbs are large, a single bulb will require a six-inch pot; beyond the ordinary care in watering, the successful cultivation of this plant presents no difficulty, but when it flowers at this season of the year, a little extra heat is an advantage.

Annuals in Pots.—Plants raised from seeds sown last August and September should be ready for potting on into larger receptacles; they include such favourite subjects as Schizanthuses, Clarkias, Godetias and Salpiglossis. If not raised last autumn, now is a good time to sow seeds as useful plants may be produced from such sowings; indeed, in the immediate neighbourhood of London and other large towns it is practically useless to make autumn sowings of these plants, as fog and lack of light generally ruin them. In this respect, the present winter is the worst the writer remembers, and young plants of all sorts raised from autumn sowings, have either been killed outright, or else so enfeebled that they are not likely to be of much use. Away from the smoke-laden atmosphere of our great cities such difficulties do not occur. With this class of plants the essentials for success are cool, airy conditions, thin sowing, and prompt handling of the young seedlings before they are at all crowded.

HARDY FRUIT GARDEN.

By T. E. Tomalin, Gardener to the Earl of Bessborough, Stansted Park, Emsworth, Sussex.

The Fruit Store.—Whilst it is important to maintain a sweet atmosphere in the fruit store, direct currents of air through it should be avoided, as these tend to cause rapid evaporation and consequent shrivelling of the fruits. A low temperature suits late Apples and Pears best, but if the latter are removed to a warmer and drier room for a day or two before they are eaten, their flavour will be enhanced. Decaying fruits should be removed immediately, but it should be remembered that the less Apples are moved about the better they will keep, and, if they are carefully examined when stored, it is usually possible to leave them undisturbed until each variety is cleared as it becomes ready for use.

Planting.—The past autumn months were favourable for planting, but where fruit trees have still to be planted, no favourable opportunity should be lost to get this work done so soon as possible. When planting choice varieties of fruits on heavy land, some extra preparation of the station for each tree will be well repaid by results. Holes three feet across or more should be excavated to a depth of eighteen inches, and the bottom sub-soil well broken up. Over this place a six-inch layer of broken bricks or similar drainage, and on this place thick turves, grass-side downwards. The excavated soil may be filled in as planting proceeds, except when planting on the site of an old tree, in which case it is better to exchange the soil for an equal quantity from an adjacent vegetable plot. Where shed-room is available, a quantity of fine soil, containing mortar rubble and bone-meal, may be kept under cover to enable planting to be proceeded with during broken weather when, if the ground is sticky, the final ramming or treading may be postponed until drier conditions obtain. When planting standard trees, it is advisable first to drive a stout stake into the centre of the hole; the roots may then be arranged all round, thus obviating the damage which often occurs when the stake is driven in after planting. Where rabbits abound, it is a good plan to encircle each tree at once with a small piece of three-feet high wire-netting. Neglect of this precaution may mean the loss of valuable trees in a single night, especially during severe weather.

THE FLOWER GARDEN.

By J. G. Weston, Gardener to the Duke of Devonshire, Chatsworth, Bakewell, Derbyshire.

Hardy Azaleas.—Where these charming flowering shrubs thrive, they should be extensively planted and they may be moved with perfect safety at any time from the end of September until April, provided the weather is not frosty. Not only do Azaleas provide a most brilliant feast of colour when in bloom, but the leaf-colour effect gained in autumn from a large mass of Azaleas is certainly one of the most charming sights we have in the garden. Many people are deterred from planting Azaleas, Rhododendrons and similar plants because their particular soil is not of a peaty nature; but there need be no hesitation for this reason. Provided the staple soil is free from lime and reasonably cool and moist, these subjects will thrive and few will give such satisfactory results. If Azaleas thrive naturally in the district, so much the better; but in any case the soil should be well broken up, and half-decayed leaves should be worked in when planting, finishing off with a good mulch of the same material.

Violets in Frames.—These should be carefully ventilated during severe weather, if only for an hour or two, as without fresh air the plants will soon become drawn and unhealthy. During the mild weather of last autumn, Violets in frames produced quantities of blooms, and though flowers were scarce during the severe weather of mid-winter, healthy plants will give abundance of flowers so soon as the sun gains a little more power in the spring. Stir the surface soil occasionally and, when required, water should be given on mild days, when extra ventilation may be given in order to dry the foliage before night. Fire-heat should only be used as a last resource, Violets being very impatient of artificial heat.

Bedding Plants in Frames.—Pentstemons, Violas, bedding Calceolarias, Marguerites, and plants of a similar character, which were propagated in the autumn, should have regular attention during the winter, admitting air on all favourable occasions and removing the lights entirely on mild days. This will keep the plants both hardy and healthy. If the soil becomes caked on the surface, stir it lightly with a pointed stick. During periods of sharp frost and snow—such as we have recently experienced—no harm will happen if the snow remains on cold frames for a few days; it is, indeed, a capital protection during severe frost. If there is likely to be a shortage of any particular bedding plant, propagation should be attended to early. Stock plants may be induced to grow freely by placing them in a warm house, well up to the light. Do not allow them too much heat, or the growth will become drawn and weakly. Cuttings of Marguerites, Violas, Pelargoniums, and similar plants will root freely in a warm house and will make capital plants by the time they are required for planting outside.

The Flower Seed Order.—If this has not been posted, it should receive immediate attention, as the pressure of orders may lead to unavoidable delay and loss of valuable time. It is far better to have the seeds ready to sow at the proper time than try to hurry the seedlings at a later stage.

Seed-sowing.—Many biennial plants are now used for summer bedding, and in most instances are treated practically as annuals, but they always require a longer season for development. If not already sown, and the seedlings growing under cool conditions, seeds should be sown in gentle heat forthwith, and the seedlings encouraged to grow in a warm, light house, until they may be removed safely to cooler quarters in the frames. Seeds of plants used for sub-tropical bedding—including Cannas, Grevillea robusta, Melianthus major, and the ornamental Centaureas—should be sown at once, as these especially require a long season of growth to ensure good plants for planting out in June. Older plants may be kept under cooler conditions for the present.

Antirrhinums.—These have become great favourites for summer bedding during recent years, and few plants give a better display in the garden during the whole of the summer and early autumn. Great advances have been made in raising new varieties, and seeds may now be procured in selected shades of colour to suit all tastes, from the purest white to the darkest crimson. There are three very distinct sections—tall, dwarf and intermediate—and as there is a good range of colours in each section, they may be used for a variety of purposes. The tall varieties are useful for planting in distinct groups towards the back of the mixed flower border, and where other space is limited bold masses may be used in the front of shrubberies, as they are most effective among dwarf shrubs. For more or less formal beds, the intermediate varieties are very satisfactory, and if dwarf plants are required for edging, the Tom Thumb varieties will answer the purpose well. If seeds were not sown in the autumn, no time should be lost in sowing them now. Small boxes filled with light, sandy soil, will be quite suitable. If placed in gentle heat the seeds will germinate quickly, but after germination the receptacles should be removed to cooler conditions in order to keep the seedlings healthy and dwarf.

FOR NORTHERN GARDENERS.

By A. T. Harrison, Gardener to the Marquis of Ailsa, Culzean Castle, Maybole, Ayrshire.

Hardiness of Plants.—The recent editorial note on this subject will, I hope, bring out many interesting facts, especially with regard to many of the reputedly half-hardy plants now grown so extensively in the milder parts of Great Britain, and while it is too early yet to state definitely which plants have suffered damage, a careful examination assures me that very few have been injured to any serious extent in this part of the country. The only member of the Olearia family that is looking unhappy so far is O. Traversi, its young, unripened shoots hanging down in a despairing manner, but the older wood and ripened growths are as healthy-looking as ever. This shrub is, however, not a very showy one, and was formerly listed as Senecio eleagnifolia, but, curiously enough, it was highly recommended a year or two ago for cliff planting (by a Scarborough reader, if I remember correctly), and it would be interesting now to learn how these exposed plants have fared. Turning to indoor plants, I have been greatly impressed by the hardiness of Regal Pelargoniums, which were dried off, cut back in the usual way during early autumn, and are now full of young growths from two to three inches long. These plants were stored in a cold house with a northern exposure, and during the frost they hung limp and looked half dead, but no sooner did the outside temperature rise above freezing point, than they immediately recovered and are, to all appearances, not a bit the worse for the experience. This is very interesting, as the young shoots are quite green and tender, and we all know what havoc a few degrees of frost can work among the ordinary Zonale and bedding Pelargoniums.

Work for Wintry Weather.—The recent wintry weather has provided an excellent opportunity for clearing out large quantities of Rhododendron ponticum and other undergrowth. This work may be carried out comfortably during severe frost and, so long as snow does not interfere, a large area may be cleared to make room for a more interesting selection of plants. Where R. ponticum thrives, as it does in the west of Scotland, it soon becomes a plague, whole woods becoming so densely filled by it as to be almost impassable; seedlings spring up by the thousand in every available space, and gain a foothold where few other plants would grow; indeed, it is not uncommon to find these seedlings securely fixed right up to the boles of ancient Beech trees, where one would imagine little nourishment was to be found. Cutting down this undergrowth if of very little use because the vitality of R. ponticum when growing under congenial conditions is simply amazing; as one old gardener remarked: "You never realise how difficult it is until you try to get rid of it." The roots also must be cleared out, and all layered branches pulled up. Bonfires lit behind the line of clearance form an ideal method of disposing of these accumulations, and if care is taken to secure the ash and place it under cover, a useful store of this fertiliser may be obtained.

IRIS GARDEN.

BEARDED IRISES IN WINTER.

Early in December last, I was casually looking over my Bearded Irises to see how they were faring and was struck by the marked difference in the condition of the wild species in comparison with the hybrids from, more or less, the same species; the chief feature being that the species from warm climates retained their foliage and colour, whilst those from mild or cooler climates had either gone to rest or were on the way to it. I became so interested that I set to work to make a tabulated analysis of the chief characteristics of what remained of the plants before the threatened frost, at this altitude of five hundred feet, might change the aspect of my plants and garden. Those of us who have studied the parentage of Irises may trace in the rhizomes and the habit of the plant at this season of the year something of their origin.

I begin my notes of observations by dividing the species into three sections or categories. Firstly, those which belong to a rigorous and cold climate; secondly, those from milder climes; and thirdly, those from warm climates.

Section No. 1.—It is generally known that all species from rigorous climates, such as central Europe, the upland plateau of Asia Minor, and the mountains of the Caucasus and Armenia, adapt themselves to their environment by restraining their energies of leaf production until winter is over. The species in this section are pumila, variegata, aphylla, macrantha and imbricata.

Section No. 2.—All these are from milder climates, and do not entirely lose their foliage nor show any sign of growth—they are, in fact, dormant. In this section are the pallidas, Chamaeirises and possibly trojana.

Section No. 3.—In this section we have the germanica race, essentially a southern European and Mediterranean group; cypriana Ricardi and mesopotamica, all three closely allied one to the other; some species from Spain and Portugal; albicans, and those from Kashmir and Persia. These all start growing in the autumn and retain the colour of their foliage.

When I compare my own species, such as I have, with the aforesaid conditions as laid down by the late Mr. W. R. Dykes in so many of his writings on this subject, I find the following results:—

Section No. 1.—My pumilas from Macedonia (about 2,500 feet altitude) and imbricatas from Armenia, are in a leafless condition, and only the rhizomes are visible on the surface of the ground; of variegata, macrantha and aphylla, I have no wild examples.

Section No. 2.—My pallidas, which were originally acquired from Parker's nursery in the early 'eighties (I have no doubt I have the true species) are dormant; and although the plants have retained their leaves, these are in a decayed condition. The Chamaeiris are in much the same condition as the pallidas. I cannot write of trojana, not having this species.

Section No. 3.—In this section I have a varied collection of wild species: a Kharput from Kashmir, and a similar variety from Persia; albicans from Mt. Athos, Crete, and Spain; germanica from Crete and some islands in the sea of Marmora, and from Scutari, opposite Constantinople. All these have retained their foliage and made new growth. In this same section, in normal years, I would include the white kashmiriana and cypriana from Crete and Taurus, but this winter, owing to the wet weather and lack of sun, my plants have not behaved as in former years, when I lived at Bexley, where I had an abundance of bloom and seeds from cypriana and Tarsus. It is only from the fact of knowing their possibilities that I register them as a race which conform to this section.

Pursuing the investigation still further; when I came to the hybrids I could trace the parentage of a species from the winter condition of many of the varieties. Interbreeding may create a new race, but if there is macrantha, pallida, trojana or the blood of any other species in them, it will out in subsequent generations in some way, and if one knows the pedigree of an Iris it is possible to detect the influence of the species, even in early winter. Take, for instance, Dominica, which is said to be a cross between Cordelia and macrantha; when I take Neptune, which is of macrantha blood, and cross it with Dominica I get a plant with a rhizome like that of the seed parent and the winter habit of the plant like both parents; the leaves die down. With Bruno and Titan, of the Dominica race, we get stout rhizomes, like those of Dominica, with slight indications of rudimentary leaf growth, which indicates the influence of a race of the second or third section. In those with cypriana blood as the seed parent × Dominica, I find the large, stout, fleshy rhizomes of both parents, with leaves taking the characteristics of the seed-parent; with very pronounced leaf growth.

Irises of variegata origin, so far as my investigation goes, are in much the same condition in the early part of December, as outlined in Section 1, and those with pallida blood behave much like Section 2, with this difference, that the hybrids may have advanced slightly by adapting themselves to their climatic environment.

I have come to the conclusion that the cold experienced at this end of Kent does not make for success with the species from warm climates, and that unless there is an exceptionally hot and dry summer it is hopeless to expect success in hybridising. The alternative is to follow the plan of our ex-President of the Iris Society, Mr. G. L. Pilkington, who, living in Lancashire, grows his Irises of the third section of species, in what he calls a "Ricardi frame," where he can control matters and give the plants all they need, except the hot sun of their native land.

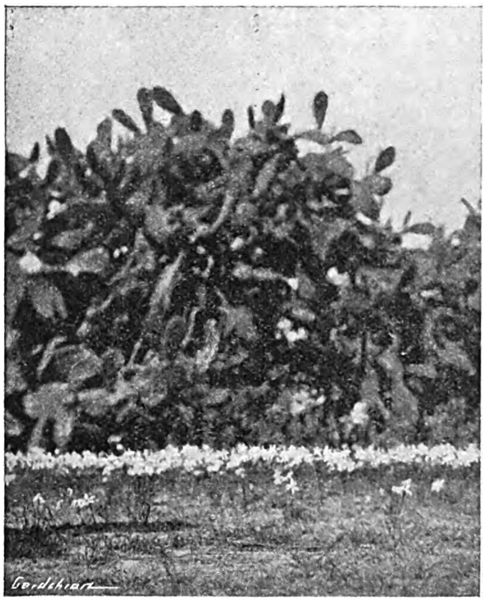


FIG. 13.—NARCISSUS SEROTINUS AT EL PALACIO, JEREZ-DE-LA-FRONTERA, SPAIN.

Early in December I visited Wisley and there noted some plants of Santa Barbara which had just been received from California. They had enormous rhizomes, and with their long and strong growth of leaves made me feel that a new race is coming into being which will be the envy of all Iris lovers who can grow my third section of Irises under suitable climatic conditions.

In the Iris Society's *Bulletin* (No. 1, November, 1924) there is an article by Sir Arthur F. Hort, which I commend to Iris specialists. He tells us he grows his Irises in "sections, each having a distinct character, so that the scheme gives a rough classification according to affinities." In their respective groups one may see the offspring of the different species, such as mesopotamica, cypriana, trojana, pallida, variegata and germanica. It is an excellent plan, and has the advantage of being educational in itself. *G. P. Baker, Sevenoaks.*

BULB GARDEN.

NARCISSUS SEROTINUS.

I thought possibly this illustration (Fig. 13) of Narcissus serotinus might interest your readers. The photograph was taken in the south of Spain. This species flowers about the end of October, appearing very soon after the first autumn rains. It is a difficult species to cultivate in England, as the bulbs need an annual baking in a southern sun. The flowers are very sweetly scented, and in appearance are very like a diminutive N. poeticus ornatus. Not infrequently two flowers are borne on one stem, and the foliage, as may be seen, appears synchronously with the flowers. *Christopher Sandeman, El Palacio, Jerez-de-la-Frontera, Spain.*

PANCRATIUM ILLYRICUM.

With reference to the notes on p. 319, Vol. LXXXII, regarding this fine plant, I may state that it is little known in the south-west of Scotland, where it is undoubtedly hardier than P. maritimum. I have seen it several times in Sir Herbert Maxwell's garden at Monreith, Wigtownshire, where it seems to be hardy and where it has flowered well. At Monreith it is growing on a terrace supported by a rockwork retaining-wall, and appears perfectly healthy. It is an admirable plant, which I hope to try myself now that I have plenty of space. *S. Arnott.*

ALPINE GARDEN.

STELLARIA RADICANS.

I came across a plant which was new to me, growing in a nursery moraine last summer. It was Stellaria radicans, and it appears to be one of the few Stitchworts which should be of value in the rock garden or moraine. This plant, as growing in the moraine, is of exceedingly neat and tufted habit, and not more than three inches high, and bears a number of small, but pretty lilac blooms. This is not the plant which is described in many works of reference, but it is mentioned by Farrer in his *English Rock Garden*. In his reference, he couples it with S. bulbosa as of "bigger, looser habit," and with white flowers. The plant I saw is tufted and has lilac flowers, but I have no reason to doubt the correctness of the name. It is of much merit as a rock or moraine plant.

HUTCHINSIA ALPINA.

Rare and expensive alpines are not always the best, and real enjoyment may be derived from some easy-tempered rock plant flourishing apace and giving masses of charming foliage and still more delightful masses of flower. Of course, our desire for novelty has to be kept curbed if we are to reap the full enjoyment of our gardens, and we must omit many precious things to make room for the commoner but no less beautiful plebians of the rocks.

With Hutchinsia alpina, the subject of this note, I would only echo what has been written of it by the late Mr. Reginald Farrer, when he begins his account by telling us that "Hutchinsia alpina may be very common, but it is none the less precious." With such an authority behind me, I may venture to put in a word on behalf of this delightful plant. Many less beautiful things are cultivated for their foliage alone, and a study of the deep green, wonderfully-cut leaves of H. alpina is by no means disappointing when seen in some dull spot of the garden or on a bank of the rock garden. Then, in May and onwards, this mat of foliage is transfigured by being covered with heads of small, purest white, Cruciferous flowers. As a plant by itself it is exceedingly pretty, and some employ it successfully as a carpet for Daffodils, Crocuses, and other early bulbs.

One must mention, however, that the mass of foliage sometimes forms a harbour for slugs, to the lasting danger of these pests which sally forth and disfigure the Crocuses. But a careful and regular examination of the spreading Hutchinsia leads one to the conclusion that it forms an excellent "trap," from which we may gather the troublesome gastropods. H. alpina may be raised from seeds or increased by division or cuttings.

CAMPANULA PETRAEA.

THE other day I compared notes regarding Campanula petraea with a grower of great experience on seeing a plant of this species in a moraine. He stated his opinion, which was the same as mine; that C. petraea was a very shy bloomer, and that it might be in the garden for years without flowering. I have just turned up the late Mr. Farrer's *magnum opus, The English Flower Garden*, in which he discusses C. petraea much to its disparagement. He remarks that it has "a cluster of dirty-yellow, small, tubular bells," and concludes by saying "It is not a biennial, but the gardener sometimes wishes it were, the plant's rarity otherwise protecting it from removal by any reverent hand." It is not by any means pleasing in foliage, being dull in colour and unattractive.

It comes from the Tyrol, where it grows on rocks. What is the experience of readers with it? *S. Arnott.*

RANUNCULUS PARNASSIFOLIUS.

THOUGH comparatively rare in nature, being apparently confined to the higher limestone reaches of the Alps, this dwarf Ranunculus responds to cultivation and thoroughly deserves a place on the rock garden, or inclusion in the alpine house collection. It does best in a sunny position, where it will receive abundant moisture during the growing season, and should be planted in open, loamy soil containing drainage material in the form of small pieces of limestone, rock and chips.

R. parnassifolius (Fig. 14) varies considerably in habit, the variations being geographical, and it is sometimes difficult to obtain plants of good flowering quality, inferior forms often being supplied as the type. It is of dwarf, tufted habit, usually forming clusters of small, long-petioled, fleshy leaves which are dull, glossy green in colour, with fringed and crimson-tinted margins. The flowers are of great beauty. They are snowy-white, sometimes tinted with pink or lilac on the reverse side of the petals, and usually borne in clusters of three or four, on short, stout, hairy stems, which are often bent over to the ground by the weight of the blooms. *F.*

ROSE GARDEN.

THE OLD DOUBLE YELLOW SCOTCH ROSE.

PROBABLY owing to lack of demand for it, the old double yellow Scotch Rose appears to be scarce in nurseries. One comes to this conclusion on finding that enquiries at three likely nurseries—two of them in Scotland—failed to discover plants of it. Even where it was catalogued by one firm, plants were not forthcoming. The fourth firm to whom application was made was, however, in a position to supply, and nice plants came practically by return of post. I had been without this old Rose for six years, owing to removal, and am glad to possess it once more.

This double Rose is not, of course, to be compared in size with the new yellow Roses of the Pernetiana type, but it has a distinct place in the garden on account of its early blooming, and the masses of bright, double, yellow flowers it produces on bushes two or three feet high. It is only a summer bloomer, it is true, but in masses and groups it produces a remarkably pretty effect in its season. Nor does it require a very rich soil, as it will grow well in a poor, sandy medium one. The writer was for years familiar with a group of plants grown in a small garden which had been reclaimed from a sandy and gravelly sea-shore, where this old Rose bloomed freely every year without manuring or other attention. It increases freely by suckers. *Alpha.*

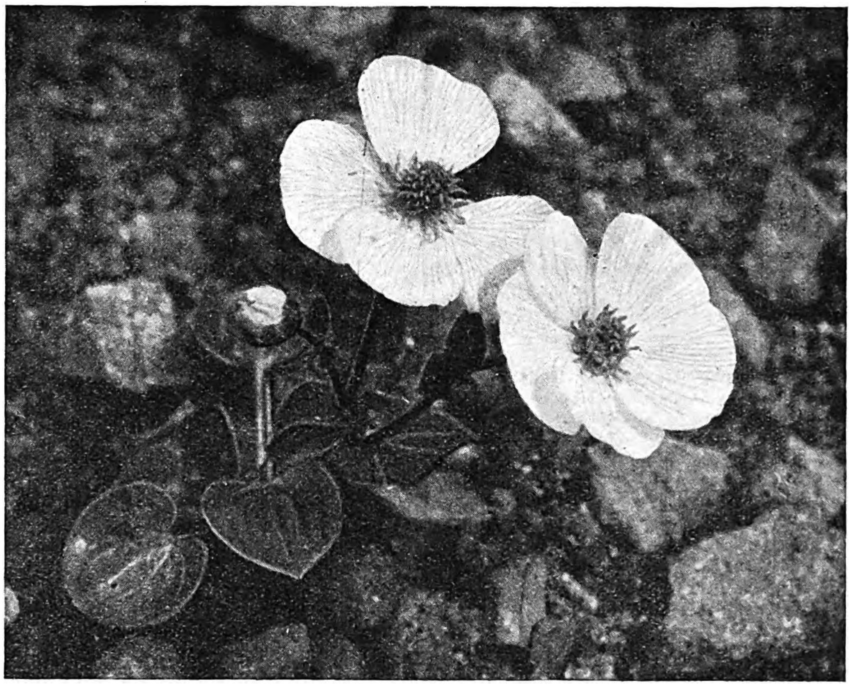


FIG. 14.—RANUNCULUS PARNASSIFOLIUS.

HARDY FLOWER BORDER.

THE DOUBLE DARK SWEET WILLIAM.

I IMAGINE those who have known and grown the old dark double Sweet William, generally catalogued as Dianthus barbatus fl. pl., will not be disposed to agree with the dictum of the late Mr. Farrer, who frankly states that "the Sweet William has little place in the garden," and who characterised the subject of this note along with the Mule Pink, Napoleon III, as "terrible, podgy, double, dwarf forms of repulsive aniline crimson."

The colour is a good deep crimson, and the plant, although dwarf, is not "podgy;" while its flowers are freely produced, so freely, indeed, that the plant frequently blooms itself to death. But this is not always the case, and it produces enough of side-growths, as a general rule, which, if taken off or layered, will root freely. It is only from six to nine inches high and is a capital little plant for near the front of the border. The origin of this very old garden plant is lost in the mists of time. It has long been known in the west of Scotland as "Murray's Double Dark Sweet William," and I believe there is a tradition that it was raised by a florist of the name of Murray, who resided in that district.

It does not seed, but propagation is readily effected by the means suggested above. *S. Arnott.*

FUCHSIA REFLEXA.

THERE was a time when we always lifted the dainty little Fuchsia reflexa, wintering it indoors, but as some plants accidentally left in the borders endured frosts as sharp as we are ever likely to get, F. reflexa has been promoted to the hardy list. Indeed, it has been proved quite as hardy as F. gracilis or F. macrostemma and their various forms. It may be cut back by frost, like most of the Fuchsias here, but this matters little in plants which break so freely from the base in spring, always provided one does not expect them to make tall bushes.

F. reflexa, for example, grows several feet in height in the south-west. In fact, it becomes a semi-climber, threading its way through other shrubs or up a wall. Here we are content with it as a rock garden or mixed border subject, and as such it makes a neat and compact little bush up to two feet in height which flowers abundantly all the summer and throughout the autumn. These flowers, barely one-third-of-an-inch across, are a vivid rose-red with a conspicuous style and stamens, both white. They are therefore, only slightly larger than those of F. Cottinghamii, whose little trumpets are nearer scarlet in tone. Both these species appear to have much in common, though F. reflexa is undoubtedly the hardier, and here more inclined to be evergreen. *J.*

PHYSOSTEGIAS.

To be neglected to a great extent is the lot of many good garden flowerss. The Physostegias are not, perhaps, sufficiently appreciated, but they are not absolutely neglected, and we find them in good gardens, where they are much appreciated in the borders of hardy flowers. They belong to the Labiates, but are superior to many of the plants included in that great Natural Order. They produce long spikes well supplied with pleasing flowers, which by their general appearance and the way they are arranged on the spikes have been likened to those of some of the Heaths. These spikes are excellent for cut flowers and, when growing, are effective in the border. There is only one species grown in gardens, P. virginiana, but, in addition, to the type, there are two desirable varieties.

P. virginiana and its varieties grow about two feet high in ordinary soil. They send up good spikes of flower and are always exceedingly pleasing in the border. The typical P. virginiana has close spikes of deep rose blooms, and is quite a good plant. There is a very attractive variety, P. v. alba, which has similar spikes of white. This is a most desirable variety for cutting. Another good one, named P. v. speciosa, has been introduced. It has good purple flowers of much beauty. These useful plants may be grown in any fertile soil, and even succeed in a poor, sandy one, although, naturally, the spikes will not be so tall as in richer compost. P. virginiana and its varieties may be raised from seeds or multiplied by division of large plants. *A.*

SEDUM SPECTABILE.

THE popular S. spectabile is the best of the Sedums for general planting, either in large beds or for massing in front of the herbaceous border; it will grow in almost any soil or situation, and from the middle of August onwards, for over two months, it gives a good display of flowers; even when not in flower, its glaucous foliage is pleasing. When planted in a large mass, a spring display may be obtained by interplanting with a good Narcissus. *C.*

TREES AND SHRUBS.

ROBINIA PSEUDACACIA.

This is one of the handsomest of our big, flowering trees. At all seasons it is a source of interest and beauty, and even when leafless its excellent bark is attractive. The corrugations of the bark are, perhaps, unique among all trees of the English woods, some of the fissures being, on old trees, deep enough to accommodate anything five inches in circumference and one foot or more long. An old trunk provides a grandly rugged picture.

The Pea-shaped blossoms of this Robinia, which hang in long racemes of pure white, are well-known, while the pretty, pinnate leafage looks delightful throughout the summer.

So far as my experience goes, big, aged trees of this Common Locust are not frequently found. There are, however, three in the grounds here, of very fine proportions, their height being fifty feet to sixty feet, with trunks eleven-and-a-half feet round. There were two more, but the lower parts of their trunks alone exist—the tops having disappeared before my acquaintance with the garden. Such specimens would, it seems reasonable to suggest, be one hundred or more years old; in fact, I should not be surprised to find this estimate too modest.

This False Acacia, as it is termed, is quite hardy, at home in most soils, and a reasonably quick-growing subject; but such trees as those referred to cannot be obtained in any one lifetime for all the money in the world. Once young and movable they have become, now, monarchs in the landscape. *C. T., Ampthill Park.*

TAXODIUM DISTICHUM.

I was greatly interested in the remarks by *R.F.*, on p. 363, Vol. lxxxii with regard to this tree. As he states, it is by no means a common tree and few mature specimens are to be found. Growing by the river-side at Brocket Hall, Hatfield, there are no fewer than fifty-six of these trees, and fifty of them range from eight feet to fifteen feet in circumference at the base. These trees extend for half-a-mile, and are planted close to the edge of the water. During the early spring, and again in the autumn, they present a picture not easily forgotten, and it makes one wonder why our predecessors did not plant this tree more freely. Our large specimens have "knees" which are quite two feet high and look very quaint rising through the grass.

Careful study of these trees has discovered five different types of foliage. Unfortunately, during the gale experienced here during the last week in October, two trees were broken about half-way down, but, fortunately, these were not two of the best specimens. *T. Pateman, Brocket Hall Gardens.*

HIBISCUS SYRIACUS.

The Syrian Mallow, or Shrubby Hollyhock, has been cultivated in British gardens for many years, and it is strange that there are now so few plants grown, even in large gardens. This may be due to their flowering habit. The typical form is a very creditable plant, both in flower and foliage, while the varieties are numerous and varied, and are effective either as solitary bushes, often six feet tall, or grouped.

The ovate leaves of H. Syriacus are beautifully serrated, distinctly three-lobed, and light green in colour, while the single or double bell-shaped flowers are borne on long stalks arising from the sides of the young branches. It is useless to plant Hibiscus in dry positions, but when planted in deep, rich, loamy, and moist soil, and given the protection of a sunny wall, or backed by taller-growing plants, they will fully justify their existence. All are equally hardy and may with advantage be planted in town squares where they thrive exceedingly well, despite the smoke and dust.

The large, double, white flowers of Admiral Dewey and Snowdrift are very attractive; those of Duc de Brabant are double and rich red; in Coeleste the colour is purplish-blue; Jeanne d'Arc has large, double, white flowers, with a flush of rose on the exterior; Lady Stanley is rosy white and very showy; Sir Charles de Breton has large, semi-double flowers of a rich violet shade; roseas plena is very free and has double, rich rose-coloured flowers; while Elegantissima has very large rosy-white flowers and produces these in abundance. *W. L.*

LEPTOSPERMUM SCOPARIUM NICHOLLI.

This variety of Leptospermum, although it was introduced by Captain Dorrien-Smith so long ago as 1908, has not become the popular shrub which it deserves to be. Its home is in New Zealand, and it is said not to be hardy in the south-western counties of England, but as its propagation is simple, either from seeds or cuttings, it seems a pity that it is not more often used in the London district, for it is a fast grower and a most graceful shrub. This Leptospermum forms a good-sized bush and is evergreen. The growth is feathery and the foliage, which is small and delicate, has many tints, ranging from green to crimson. The carmine-red flowers are not unlike those of the smaller Escallonias, and the bushes are smothered with them in summer.

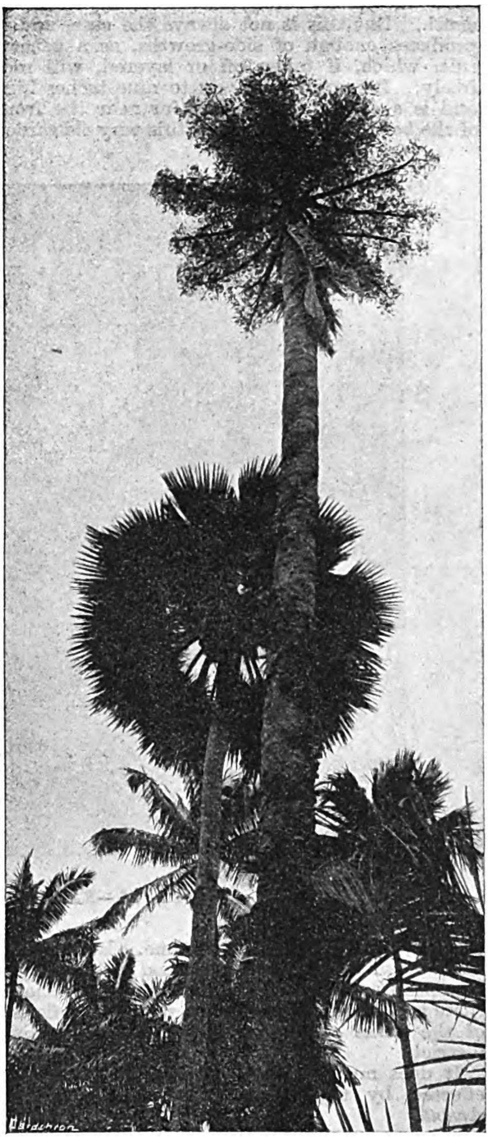


FIG. 15.—CORYPHA UTAN IN FRUIT IN THE BUITENZORG BOTANIC GARDENS, JAVA.

In Surrey it has survived 20° of frost in a small state in the open, and appears to be quite hardy with the protection of a wall. A specimen which was planted in 1921 on a house in Dorsetshire, in a wind-swept situation, has grown into a very fine plant, ten or twelve feet high, and when in flower is an object worth looking at. Like many of the New Zealand plants, it does not seem to object to wind.

Although many keen gardeners only buy one specimen of a rare plant, it seems, if they would increase the number they order from the nurseryman to three, and give each one different conditions—and this can be done in most gardens—that where one fails the others might flourish. At the present time, with the floral wealth of the world before us, we are by no means adventurous enough in our gardens. *William Acworth, Donnystone Nurseries, Chobham.*

DAMAGE TO SITKA SPRUCE IN BRITISH COLUMBIA.

I read with much interest the article by Mr. George Fraser in your issue of December 10, 1927. As I happened to be Field Officer for forest insects in the Dominion Entomological Branch in 1914, and was stationed in Stanley Park for some time, the following personal observations on the aphis question may interest Mr. Fraser.

In 1914, the two most important insect pests of the Sitka Spruce in Stanley Park were Chermes (Gillettea) Cooleyi, Gillette, the Spruce-gall Chermes, which produced galls in great numbers on the shoots; and Myzaphis abietina, Walk., the Green Spruce Aphis, which occurred in quantity on the needles and caused extensive defoliation even on large trees. Some considerable time was spent studying the habits of these two insects, and a complete survey was made of the Spruce in the park, with notes on their condition. The general conclusion which was arrived at as a result of this work was that the outbreak of both insects owed its origin to the fact that, Stanley Park being a logged-over area, the Spruce left after logging were of an inferior type, many of them being in an ideal condition for insect attack. Mr. Fraser concludes his article with the following sentence:—"No doubt there are all kinds of insects on the West Coast Spruce, but the catastrophe on Shelter Island would appear to be due to other causes. Polypodium Scouleri is not damaged, and the luxuriant undergrowth of Gaultheria Shallon is unharmed." I do not follow Mr. Fraser's reasoning here. The presence of an aphis on the Spruce, even in large numbers, could not in any way affect the undergrowth any more than the extensive damage, which I frequently observed done to the leaves of G. Shallon in Stanley Park by a leaf-miner (Lithocolletis sp.) could affect the Spruce amongst which it was growing. My point is, that I believe the green aphis of the Spruce to be a serious pest, and one which is capable of doing great harm to trees of all ages. In the Beacon Hill Park, Victoria, for example, I saw young Sitka Spruce aged from five to twenty-five years, completely defoliated by this aphis in a single season, and in Britain our young plantations of both Norway and Sitka Spruce suffer severely from its attacks.

At the same time, it is extremely probable that Mr. Fraser is correct in supposing that the insect may not be the primary cause of the damage. It is possible that the attack of the aphis began on trees which, because of over-maturity, storm damage, fungus disease or some other cause, have begun to decline in vigour, and have given the aphis its first start. The attack once begun would spread quickly to the healthier members of the stand, whereupon the aphis, by reason of its tremendous power of rapid increase, would certainly be capable of performing its part as a secondary pest with extremely serious results.

This aspect of the problem—the discovery of antecedent causes underlying insect outbreaks,—is, to my mind, one of the most important and useful tasks which the forester can undertake, but its complexity is such that it may take some time before a satisfactory solution can be reached, and it will be necessary to use great care in picking out the important factors in the situation.

I notice that the aphis as found on the trees of Shelter Island is described as Lachniella Vandykei, Wilson. I have no acquaintance with the work of this species, but from Mr. Fraser's description it appears to resemble very closely that of the green Spruce aphis. *R. N. Chrystal, M.A., B.Sc., Lecturer in Forest Zoology, Imperial Forestry Institute, University of Oxford.*

CORYPHA UTAN, LAM.

This enormous Palm, better-known as Corypha Gebanga, Bl., bears also other synonyms—C. elata, Roxb., and C. sylvestris, Mart. It has a ringed trunk, generally remarkably straight and reaching a height of over 27m. The leaves are of gigantic size; indeed, they are among the largest of "fan leaves." The petiole is from 2m. to 4m. long, and armed with brown spines on the margins. The petioles of young plants, however, sometimes reach a length of 7m. The blade is about 1.50m. to 2m. long, and 2m. to 3.50m. broad, with segments numbering from ninety-five to a hundred, which are again bilobed. The flowers are borne in huge, terminal panicles, and some I have measured were 4.60m. long, with a diameter of 5.80m. This Palm flowers only once, mostly when thirty to seventy years old; it then dies. The fruit is a roundish, one-seeded drupe of 2½cm. diameter.

Corypha Utan is a native of Java. Mr. F. Junghuhn, one of the well-known explorers of Java, makes reference, in 1847, to this Palm as growing especially in the coast regions of West Java. He states in his book *Java*, that Corypha Gebanga grows in a small girdle along the south coast, and that it is the only Palm which predominates in the landscape. It grows chiefly on the lower slopes of the mountains in the neighbourhood of the villages Tjidamar and Soekaparna, never being seen above an elevation of 600 feet, and sometimes approaching the seashore at a distance of ½km. In the Moluccas, Timor and Celebes, this Palm is to be found also, mostly at an altitude of 0m. to 300m. It never forms a dense forest, but the trees are sparsely scattered over the area, with an undergrowth of Imperata arundinacea (cylindrica, Beauv., var. Koenigii) and a Bamboo species, the latter sometimes reaching a height of 10m. Most probably the Corypha elata, Roxb., growing in Burma and Bengal is identical with C. Gebanga, as stated by Dr. Beccari in a note found in the Buitenzorg Herbarium.

In our Archipellago the young fruits are used as a fish poison. Dr. Haaskarl states that the ripe seeds are sometimes used as beads, and that the beads become black with age. The seeds of the Talipot Palm (Corypha umbraculifera) are used similarly, with the difference that they are of a red colour and hard, like ivory.

C. Utan serves various economic purposes, of which Mr. K. Heyne gives a description in his *De Nuttige Planten van Ned. Indie* (The Economic Plants of the North-east Indies). A summary follows below:—

A good remedy for diarrhoea is to chew the thin roots of Lontarus sylvestris (Rumphius' name for this Palm) with the roots of Senecio sonchifolius, Moench., and to swallow the juice (*Rumphius*, Part I., p. 53). Dr. Bleeker states in *Natuur en Geneeskundig Archief*, 1844, p. 79, that the whitish roots are slightly astringent and therefore excellent for persons who suffer periodically from diarrhoea.

The hollowed trunk, covered on one side with goat-skin, is used by the Mohammedans as a dull-sounding drum, which is beaten at the time of prayer. The pith of the trunk yields a kind of dirty, red Sago. In Madura and North Celebes this is beaten into flour and eaten in time of famine.

In some parts of the Indian-Archipellago, as in Borneo, Timor, Celebes and other places, the Palm is tapped, and the natives drink the fermented juice as toddy, or "Palm wine." The *Indian Agriculturist*, Vol. 35, No. 1, gives a clear insight into the methods of tapping the allied Talipot Palm. The *Philippine Journal of Science*, A. 1911, p. 147, however, gives a good description of the tapping of C. Utan, known there as "Buri Palm."

From the young and not unfolded leaves, the ribs are removed and strips made, which, after being soaked in water and dried, are used in Celebes for various kinds of basket-work and matting. In the Philippines these strips are used for other purposes; cheap hats are made of them, but chiefly they are employed for manufacturing the so-called "bayones,"—sacks used as packing material for exporting Sugar. All depends upon the dressing of the strips. The best are those without hard tops and edges, taken from the upper-side of the young leaf. The finest strips, mostly of a length of about 1m. and known in the Celebes as "agel," are sold in Macassar from seven to eight guilders a picul; the second quality is 1.25m. long, and about 2½cm. broad, and sell in Macassar at four to five guilders a picul.

The split petioles from which the pith has been removed, are soaked and beaten until the vascular tissues are free, thus giving a kind of fibre, whereof the natives of Macassar make a coarse sort of rope which serves them for the rigging of their small boats.

According to the *Philippine Journal of Science*, C. 1911, p. 113, the Buri Palm in the Philippines produces three different kinds of material for making hats. The strips mostly used are the above-mentioned leaf-strips for making cheap hats. The fine Calasiao or Pototan-hats, are made from the split ribs of the as yet unfolded young leaves. From the fibre of the petioles of full-grown leaves the fine and valuable Lucban hats are made, known in the United States of America as Bangkok hats. The *Philippine Agricultural Review*, 1923, p. 287, states that during the year 1919. Lucban hats were produced to the value of two million pesos.

Our natives use the old leaves for making umbrellas, the umbrella-like hats worn by the lower classes, roofs for their houses, and a rough kind of matting that serves various purposes.

Thus far, I have dealt with the economical value of Corypha Utan, and now will give a few measurements taken of trees growing in our Botanic Gardens at Buitenzorg.

In 1921, an old tree came into bloom, the gigantic panicle bearing thousands of small flowers with a rather sweet scent, which were visited by hundreds of bees. The trunk measured, from the base to the top, including the panicle, 27.55m. The girth at 1.50m. above the ground was 2.60m., while the panicle had a length of 4.60m., and a diameter of 5.80m.

In 1927 another tree flowered (Fig. 15). The trunk of this specimen measured, from the base to the top, including the panicle, 30.85m. The girth at 1.50m. above the ground was 2.83m. The panicle had a height of 4.10m., and a diameter of 8.90m. The latter measurements thus show a slight difference from that of the Palm which flowered in 1921.

Another specimen (Fig. 16) is also of fairly good size, and the measurements of one of the leaves is as follows:—Petiole, 2.90m. long; length of the blade, from the base to the top, 1.50m.; width of the broadest part of the blade, near the base, 3.50m. *P. Dakkus, Curator, Botanic Gardens, Buitenzorg, Java.*

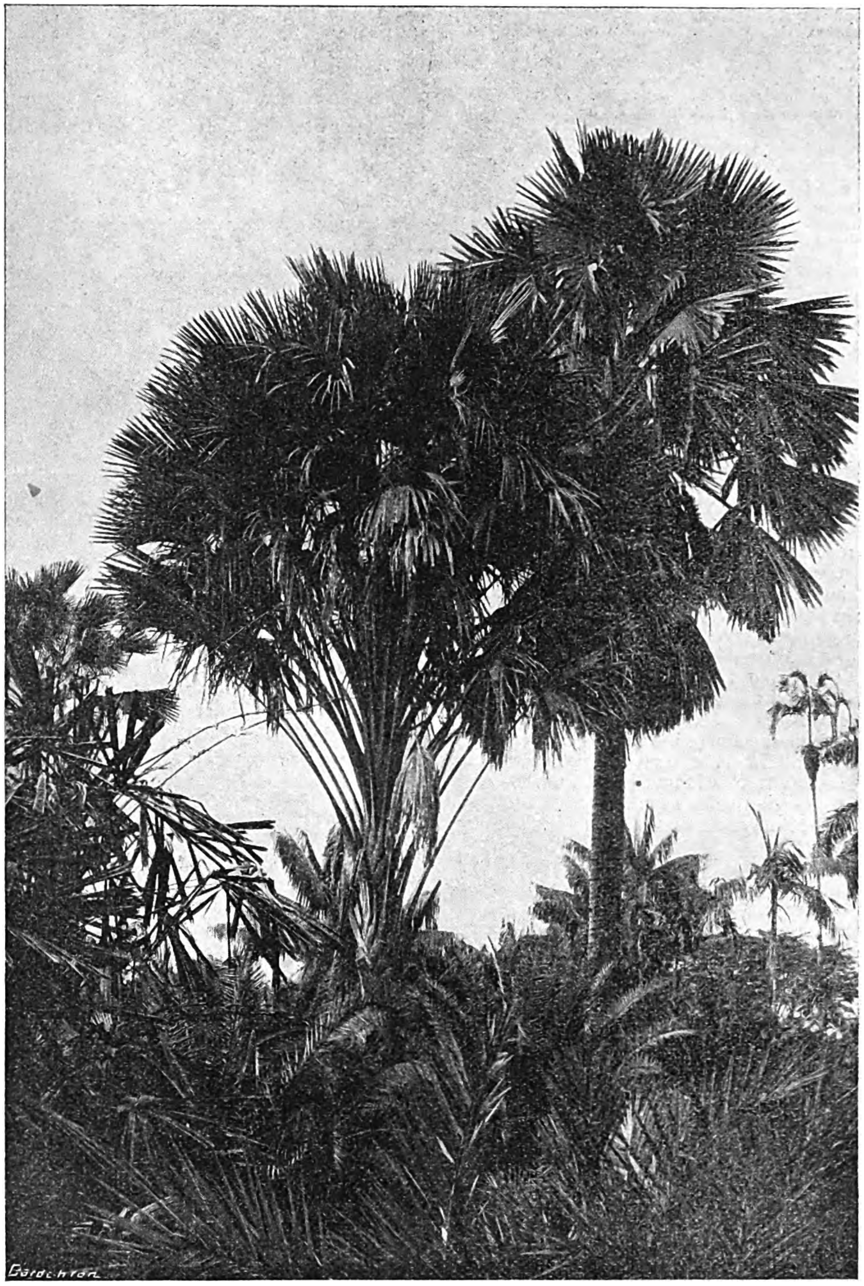


FIG. 16.—CORYPHA UTAN (RIGHT) IN THE BUITENZORG BOTANIC GARDENS, JAVA.

EDITORIAL NOTICES.

ADVERTISEMENTS should be sent to the **PUBLISHER, 5, Tavistock Street, Covent Garden, London, W.C.2.**

Editors and Publisher.—*Our Correspondents would obviate delay in obtaining answers to their communications, and save us much time and trouble, if they would kindly observe the notice printed weekly to the effect that all letters relating to financial matters and to advertisements should be addressed to the* PUBLISHER ; *and that all communications intended for publication or referring to the literary department, and all plants to be named should be directed to the* EDITORS. *The two departments, Publishing and Editorial, are distinct, and much unnecessary delay and confusion arise when letters are misdirected.*

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Newspapers.—*Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see.*

FOLIAR ANOMALIES OF GINKGO BILOBA.

At a recent session of the Scientific Committee of the French National Horticultural Society, some curious specimens were examined, taken from an old tree of Ginkgo biloba growing in the garden of the Portici (Italy) College of Agriculture, and sent for inspection by Professor Trotter. The tree is of the female sex, and produces, from time to time, a few rare fruits, although the nearest male tree is in the Botanic Garden at Naples, about nine kilometres away as the crow flies. It is, of course, possible that pollen from this tree is blown by the north-west winds, but, on the other hand, it is difficult to be certain that no male flowers are accidentally produced.

But this Portici specimen is chiefly interesting by reason of the numerous and curious anomalies which it presents.

In an interesting note published by Professor Trotter in 1923 (*Produzione di ovuli et di semi sulle foglie di Ginkgo*), the following particulars are given concerning the same specimens which were shown to the Scientific Committee of the French Horticultural Society.

In the first place, there are ascidiform leaves which are very abundant each year, often nearly a thousand. These resemble a kind of narrow, regular, cone-shaped, elongated funnel, with the top edge free inside, and slightly lobed. Other foliar deformities were subsequently observed. The most frequent and the simplest is the production of small, linear, fleshy thickenings, from four to ten millimetres long by one to two millimetres in width, situated on the edge of the leaves, or at the junction of two contiguous lobes. The number of these thickenings is rather variable ; there is often one to each leaf, sometimes more—up to ten have been counted. This production causes a division of the border of the leaf into more or less distinct lobes.

Other anomalies, much more apparent, have also been observed. On these same leaf-edges are produced noduliform excrescences, rather variable in appearance and in dimensions, but having the general character of ovules or seeds, more or less voluminous and regularly formed.

On examination of the simplest malformation —the small, linear, fleshy swellings—a transverse section reveals an abundant parenchymatous tissue, with numerous tannin cells, and large secretion glands.

In the more complicated cases, there are, on the foliar edges, actual ovules furnished with a basal collar which unites them to the tissue of the leaf, and capable of turning into seeds comparable to normal seeds. These seeds are elongated in shape, like those of the Olive, and attain a size of twenty-five millimetres in length by fifteen millimetres in width ; inside there is a scelerotic layer, well differentiated, surrounding a narrow cavity of eight or nine millimetres by four millimetres, occupied by embryonic tissue. These seeds have been collected in the month of June, in course of development, and even then have a diameter of ten millimetres.

The Portici specimen thus offers numerous and varied examples of the phenomenon known as pistillody or carpellody. It should be noted that this condition is extremely rare, and has never before been observed, except in Japan, by Shirai ("An Abnormal Ginkgo Tree," *Bot. Mag., Tokio.*, Vol. V, 1891, p. 342 "). There has also been observed in Japan, and with equal rarity, the production of anthers on the leaves of male specimens (staminody). *A. M.*

MR. F. KINGDON WARD'S NINTH EXPEDITION IN ASIA.*

XXIII.—A Winter's Journey to the Lohit.

We woke up so soon as it began to grow light, on November 1, because we were too cold to sleep soundly ; luckily, no more snow fell. We waited two hours for the lost coolies, but as they did not appear, I realised that something untoward had happened ; had they camped for the night higher up the valley they would certainly have rejoined us so soon as it grew light enough to move, without even waiting to have a meal, as they would be only too anxious to get out of the snow. So first one of the Lisu diehards started off to look for them, and half-an-hour later I followed. When I reached the last clump of Fir trees, and there was no sign of them there, I realised that disaster had really overtaken us at the outset, and for half-an-hour I felt very gloomy, fearing that it might be irreparable disaster ; for although I was over the pass, and could certainly have salved enough food to take us all safely to the Lohit, it was quite impossible to abandon the collection.

I ascended to the lower lake and sat down to think things out. What I had in mind was that the wretched Tarons, having got to the top of the pass, and seen with horror the snowbound, treeless valley below them, had waited till we were out of sight, and then hurried back to the yak camp, with our loads. There it might be supposed they had dumped my boxes, divided the rations amongst themselves, and fled down the valley to warmer regions, where they would disperse in the jungle ; nor could I recollect whether I had really seen all the coolies descending the snow wall the previous day, or only the six who had actually arrived. To state that I could have kicked myself for having gone so far ahead, instead of keeping in the rear, whence the coolies, however dead beat, could have been cursed, cajoled, and bribed to get along down to the beginnings of the forest, was to put it mildly ; but having made an error of judgment, it was vain to regret, so I began to think out a plan of action which would not involve a return to our base camp—though I could not lose sight of the fact that such a course might be necessary, to save the collection.

Imagine my joy when the Lisu appeared, carrying a box of stores, and a bag with a little Rice in it ! We returned to camp, and from the men I learnt, in a mixture of Burmese and Chinese, that the loads had all been dumped by the upper lake ! A huge weight rolled off my mind when I heard that welcome news ! Obviously, it was now easier to go on than to go back, and I hastily reconstructed my plan, and then, squatting round the fire, communicated it to the men, who agreed. This plan was simple enough. The six men must rescue the loads from the lake-side immediately, jettisoning only such things as we could do without—tent, oil, my camp bed, and so forth. When everything had been brought into camp, and not before, all seven of us would shoulder a load, and do one stage down the valley, where we would make a second dump, returning for the things left behind. The third stage would take us to the hot spring, and when we had salved everything we required, including, of course, my collections, we could dump them there out of the snow, in comparative safety—I dared not leave anything of value higher up the mountain, as the next snowstorm would bury it. Things, however, could safely be left at the hot spring, where there was a bark hut ; and from there, travelling light, we could march straight down to the Lohit in three days, and send men back to salve the loads left at the hot spring.

It seemed a watertight plan, and the diehards were agreeable, although I had to distribute amongst them every stitch of surplus clothing left to me before they would agree to go back through the snow to bring in the loads ; it really was terribly cold up by the lake, and we had to tramp through deep snow which had drifted heavily against a steep face just beneath the lower lake.

The first thing to do was to eat. After a good meal, the six men started back for the lake, while I remained in camp ; my job was to collect a huge pile of firewood for the night, and hack out a warm bolt hole in the Rhododendron thicket, where we could sleep, comfortably protected from the icy wind.

The men were absent nearly five hours, and I was glad to see them, as it was quite dark before they arrived, and it was becoming lonely in that cold, silent wilderness. They brought in over a load apiece, and it was a great relief to me to see my collections safely deposited beneath the Rhododendrons.

The night, though cold, was brilliantly fine, and we slept snugly ; I was jubilant, and felt that fate had been more kind to me than I deserved. On November 2 the sun shone brightly and the clouds dispersed ; it was the first day of the new moon ! I gave my two coolie servants a rest in camp, while the other four went back for the remaining loads, and I went up to the lower lake to take photographs, and then up the mountain side to collect seeds of the tiny-leafed 'Lapponicum' Rhododendrons, which I had not been able to find on the Burma side of the pass.

That night all loads were reported salved, except a few we left behind, and I reviewed the position. We were short of rations, but the Taron coolies, in their fright, had not taken so much as they might have done ; in fact, only one Rice bag, some flour, and a few small things. What had happened was now clear. The poor wretches had struggled over the pass and through the snow to the lake, following the trail we had stamped. At the lake they had rested, while we went on down the next cliff to the lower lake. From the upper lake the forest was still invisible, they could see nothing but rock and snow, and suddenly panic had set in—probably one man lost his head. In a moment they decided to abandon us, the loads, everything, and get back over the pass before darkness set in, facing that steep climb through the snow drifts, rather than go on ; the danger they knew was preferable to the danger they feared. They took with them sufficient food for the journey back to the first village, probably snatched up in a fright just as they were going, fearful lest one of us might return at any moment to see what had become of them. I hope they got safely back !

The storm was now over, and I hoped for a fine spell lasting at least ten days. That night the temperature fell to 18°, or 14° of frost under the trees, but the day was brilliant, and starting at 9.30, we reached our old Camp II in three hours; as the six men were carrying eight ordinary loads between them, and I was carrying about 40 lbs. (which I was not accustomed to), this was quite good, and instead of calling a halt here, I decided to go on to where the Birch forest began. We reached the first meadow in another hour, and halted on the edge of the forest, where there was a tiny bark shelter, built by wood-cutters, who came up here from the Lohit in the summer. On the way I collected a lot of Rhododendron seeds from capsules now agape; their order of appearance on this side of the pass was, in the boggy, meadow, two 'Lapponicums,' and alpine 'Saluenense' on rocks, yellow 'Souliei' and big 'Lacteum' in the Abies forest, with a few thickets of small 'Lacteum' in open places.

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* The previous articles on Mr. Kingdon Ward's Ninth Expedition in Asia were published in our issues of August 14, 28, October 9 and November 20, 1926, and January 1, February 19, March 5, 19, April 9, 30, June 4, 18, July 30, August 20, September 10, October 1, 15, November 5, 10, December 3, 17, and 31, 1927.

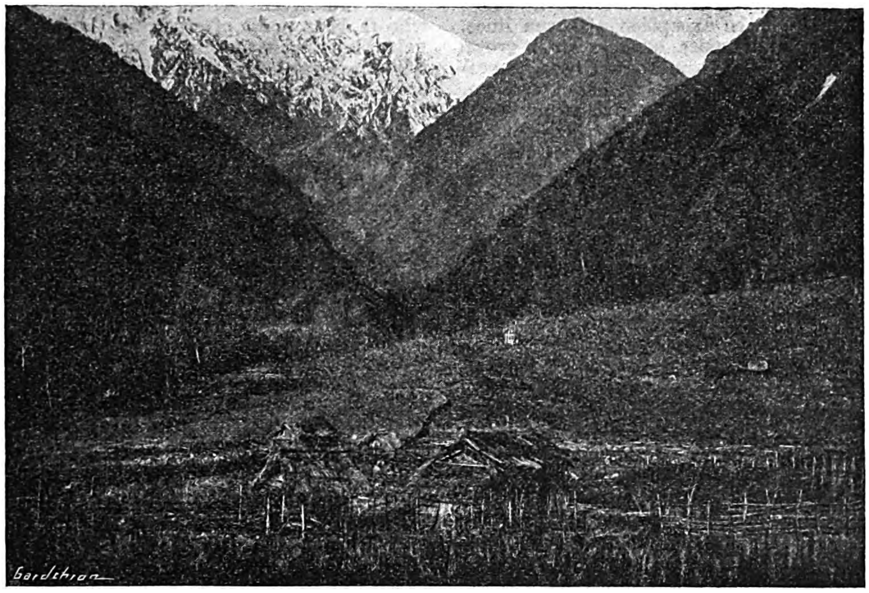

FIG. 17.—THE LAST INHABITED HUT IN THE LOHIT VALLEY; WINTER SNOWS CREEPING DOWN TO THE FOREST.

The Rhododendron leaves were all composing themselves for the long winter sleep, by drooping, curling, or rolling themselves into stiff tubes.

November 4: minimum 25°; a brilliant, sunny day, but a cold wind whistled over the ridge above camp, where I ascended to collect seeds while the coolies went back for loads. On the sun-dried grass slopes, whence the snow had already disappeared, the vivid blue Gentiana Veitchiorum was still in flower, but it was the only one. In fruit, I noticed Meconopsis violacea, Primula capitata, P. apocliata, Cyananthus, Morina, Pedicularis, Nomocharis and Lactuca, in fact the same alpine flora that one would have looked to find in a similar position on the other side of the range; the change in the flora increased rapidly as one descended the valley. On the flanks of the ranges, which were irregularly clad with Fir forest, were patches of thick bush, composed chiefly of Juniper, Lonicera, Acer, Berberis, Rubus, Prunus, Pyrus, Salix, Cotoneaster (on rocks), Rosa sericea, Rhododendron trichocladum, etc. A little higher up, Potentilla fruticosa and three small Rhododendrons, namely the purple 'Lapponicum,' 'Anthopogon,' and 'Saluenense' clothed the escarpment, and towards the summit of the ridge, which was very steep and broken (only to be climbed, and then with difficulty, by following one of the gullies) the woody plants met with were the scented and small-leafed 'Lapponicums,' another species of Lonicera, Spiraea and Cassiope. At the very top—altitude about 14,000 feet, no plants at all were visible, but a great deal of snow lay amongst the angular boulders, forming a treacherous crust. From this point of vantage I could see the Diphuk La, and, looking down the valley, the gorge of the Lohit, with the mountains again beyond that.

The coolies did not return that night, but slept at the upper depot and arrived with their loads early the following morning. Meanwhile two Tibetans from Zayul arrived and volunteered to make one trip down to the hot spring, carrying loads, before they went on over the Diphuk La.

November 5: minimum 23°; another bright day. I stayed in camp packing seeds. The four coolies from the upper dump arrived, and while two returned for the last loads, the other two started moving the stuff down to the hot spring. This enabled me to celebrate my birthday, November 6, by humping my load down to the spring; here two more days were spent while the loads were being relayed from the camp above. We were practically out of the snow here (altitude about 10,000 feet), although it still lay deep under the trees on the shady side of the valley; and being well within the forest zone, I had no qualms about leaving the stuff we couldn't carry with us, and pushing on to the Lohit for help, as soon as everything had been brought in. The forest here was quite open, a mixture of Conifers (Abies and Juniper), with deciduous trees such as Poplar, Maple and Birch, with an undergrowth of shrubs, Ribes, Lonicera Webbiana and two other species, Rosa Moyesii, Euonymus, and the 'Heliolepis,' big 'Lacteum,' 'Grande' and 'Souliei' Rhododendrons.

November 7: minimum 24°; another fine day. I went up the steep scree opposite to collect Rhododendron seeds, particularly the small 'Roxieanum,' hybrid 'Souliei,' and plum-coloured 'Campylogynum.' The upper part of the scree was under deep snow, and my 'Sanguineum' was completely buried, but I got a few seeds of it from a projecting capsule. It was chilly up here in the wind and the snow, and the shadow, but descending into the sunlight I was soon warm again. Some Tibetans from Zayul arrived at the hot spring at dusk, and my men got back with the loads. All the coolies by this time had finished their rations, so I had to feed them with the supplies intended for the Mishmi Hills journey.

November 8: minimum 22·5°; a fine day. I stayed in camp, feeling stiff, and one coolie returned to the camp above for the last load, arriving back at dusk.

All seven of us started down the valley the next morning carrying a good deal; we reached our old Camp IV. The forest changes rapidly below the hot spring, enormous Picea and Tsuga trees, eight feet in diameter, replacing Abies, with new species of Rhododendron and Lonicera. We met some Zayul men on their way to the Seinghku; they were much more warmly clad than my Tarons, and the snow did not daunt them.

On November 10 we did a long march again, camping in the forest. Some of the trees had coloured beautifully, and a lurid glow suffused the sun-kissed valley. I collected seeds of all the Tibetan Rhododendrons—'Virgatum,' 'Triflorums,' 'Maddeni,' 'Grande,' and 'Edgworthii,'

A seven hours march next day brought us to Kahao, where I was handed a letter from the Political Officer, Sadiya; but the Mishmi who had brought it, and who was to guide me to the plains, after waiting several days for me, had gone back, thinking I was not coming. We established ourselves in an empty hut, and prepared for a longish halt, as I saw no prospect of getting away for another week.

F. Kingdon Ward.

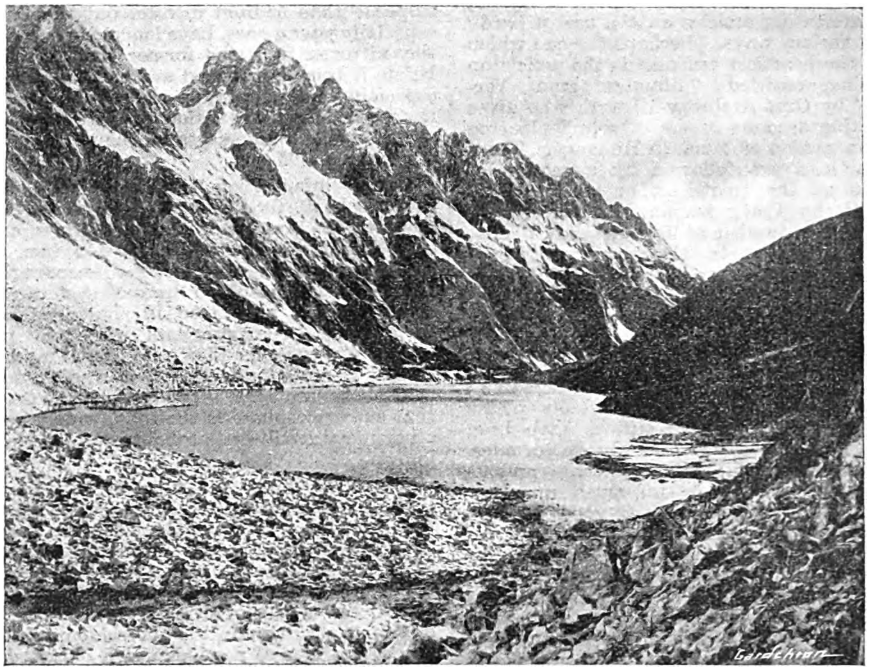

FIG. 18.—A MOUNTAIN LAKE ON THE BURMA-TIBET FRONTIER; ALT. 13,000 FT. WHERE MR. KINGDON WARD'S COOLIES DESERTED HIM.

NOTICES OF BOOKS.

Hardy Plants.

WE are not surprised that this excellent book* which was first published in 1910, has already reached its fourth edition. It is the first of a trilogy of which the other two—*Unsere Freiland-Laubgehölze* and *Unsere Freiland-Nadelhölzer*—though invaluable to those interested in trees and shrubs, could never make so universal an appeal as *Unsere Frieland-Stauden*, which deals with the popular hardy plants to be found in so many gardens, large and small, not merely in Germany, but over the whole of western Europe, in many of the more easterly countries, and in the United States and Canada.

With the urge towards ever-increasing perfection which distinguishes the true artist, the editors (as we are informed in a preface to the present edition) have procured a number of new collaborators, including a Dutch horticulturist, Th. Hoog junior, of Haarlem, who has revised and enlarged the text of the portions of the book relating to bulbous plants; and a number of other specialists who have given freely of the fruits of their own particular experience. Special attention has been paid to nomenclature, and the suggestions of the American Joint Committee on Horticultural Nomenclature, held at Salem, in 1924, have been followed in many cases.

In order to make the book as useful as possible to English and American readers, the common English name of every plant is given (where such a name exists), both after the botanical one, and also in its own alphabetical order. This considerably increases the length of the book, since, for a great many of the commoner flowers, there is a botanical name, a popular German name, and one or more popular English ones. As the whole of the descriptive text is in German, we doubt whether the mere inclusion of the English name is sufficient warrant for the increase in the space used, and the extra work entailed.

The arrangement of the book, as those acquainted with this series will recall, is mainly alphabetical, the only practical method for a work which is required chiefly for purposes of reference. There are, however, in addition, several interesting articles on the use of hardy plants in various ways. Perhaps the one which will find the heartiest welcome is the article on naturalising, entitled "Stauden zum Verwildern," by Graf Ambrozy-Migazzi, who gives a fascinating account of the "wild" planting of his own garden at Tana, in Hungary. These special articles are followed by a section of directions on the treatment of hardy plants in general, by Franz Zeman. At the end of the book are a number of lists of hardy plants, classified according to their use, period of flowering, suitability to particular soils and conditions, and colours; and last, but not least useful, is a list of those plants most favoured by bees.

The number of illustrations, ample in all the former editions, has not been increased; but a good many which did not wholly please the fastidious taste of the editors have been removed, and their places taken by better ones. The reproductions which illustrate the present edition could scarcely be improved upon, so far as quality is concerned, so good an idea do they give of the general habit and appearance of the plants represented. We are now writing of black and white illustrations, which, notwithstanding their inherent incapacity to give any idea of the colours of the subjects, are greatly superior in quality to the coloured illustrations. Of these, the subjects have not been sufficiently carefully chosen, the colours are dull, and in many cases incorrect. It seems not unlikely that the editors themselves are aware of these deficiencies, as the present edition contains fewer coloured plates than the last one.

Of the printing, paper, and general make-up of the volume, it is difficult to write too highly; and it has one great advantage, at any rate in English eyes, namely, that it is printed in Roman, not in Gothic type. We should have thought that, where every inch of space is of value, some of the less important illustrations might have been cut down to smaller dimensions, without committing, in this direction, the absurd excesses common in an ordinary illustrated dictionary. For instance, the illustration of Rheum Alexandrae on p. 323 occupies the whole of the page, with the exception of seven lines, although Rehmannia elata, a plant which grows to a greater height, is represented by a photograph occupying only five inches by three, a space quite large enough to give an excellent idea of the original, as the height to which each plant grows is usually given with the title.

All German gardeners, whether amateur or professional, are likely to give this new edition of *Unsere Freiland-Stauden* a warm welcome, and we can commend it to English hardy plant enthusiasts who possess an acquaintance with the German language.

Fertilisers and Soil Improvers.*

THIS is altogether a modern book, of a technical character, designed to meet present-day requirements, when the utilisation of fertilisers, from whatever source obtainable, is imperative, owing to the scarcity of the animal manures which used to be far more plentiful. The fertilisers of commerce are now much more numerous than they were a generation ago, and much more complicated in their origin, chemical composition, and their fertilising value. It can scarcely be expected that all, if any, manure merchants can stock a tithe of the manurial products reviewed in the book, but the latter should prove serviceable by enabling the reader to obtain some understanding of the nature of those fertilisers which may be available at any given place, and the crops for which they are most suitable. In the summary of nitrogenous fertilisers it is admitted that soils vary so much that the particular form to give the best results can only be named in general terms, so that the cultivator will still have to make experiments on his own soils. It is made clear, however, that it is not only safer to use ammonium sulphate than sodium nitrate, but that plants, especially young ones, have longer time to collect the nitrogen from the former than the latter, before it becomes washed away in the drainage, especially during rainy periods. On the other hand, the fertilising value of nitrates is given as 100, while ammonia salts, the next in value, are given as 95.

Useful information is given with regard to phosphatic fertilisers, which have a great effect on the number of seeds and fruits, and on early ripening. They also have a like value for young plants or crops, by encouraging a quicker development of the root system. This is information not given in the older books. In a series of experiments with pot plants and phosphatic fertilisers, it was found that basic slag gave much the best results, and an acid phosphate came second; yet it is declared that superphosphate is the most widely used of all artificial fertilisers, probably because the best known.

Potash is more generally present in soils than the other two fertilisers which are generally required, but it is insoluble and some base has to be applied to render it available, such as salt, sulphate of soda or lime, the latter being the safer and most useful. Notwithstanding this, the writer of the note is aware that in some districts of Britain lime is seldom used for any purpose, and dependence is placed chiefly on farmyard manure and rotation of crops. Like phosphates, potash is very favourable to the size and weight of root crops, seeds and fruits, and is therefore essential to the welfare of Potatos, Tomatos and other starch and sugar producing crops. Even the green patch on Tomatos is said to be probably due to the deficiency of potash. Potassium sulphate is recommended in preference to kainit, potassium chloride, etc. Many cultivators will be puzzled about the difference between ground lime, ground limestone and ground chalk, all here explained. To this may be added the trade names for lime. The information in the book is very extensive as to the sources of artificial and other fertilisers, while percentages of their value are given, where available. To those who make a point of studying the book, much valuable information may be obtained, especially in regard to the amounts to use, which are always very moderate.

An Austrian Florists' Directory.*

FROM Vienna, we have received a Directory of Austrian florists and nurserymen, containing some 4,000 names and addresses, which will doubtless prove of great service to those for whom it is intended. The book is divided into sections, according to the chief cities and provinces of Austria, and in each section there is a separate list of nurseries, landscape gardeners, wholesale florists, retail florists, tree and Rose nurseries, and seedsmen. The lists appear to us to have been unnaturally swollen by the inclusion, as a separate establishment, of every branch of a business, but possibly this is only done to simplify reference.

The arrangement of the book is peculiar, and would seem to suggest it has been compiled by someone unfamiliar with such work; for instance, the list of contents, instead of being at the beginning of the book, is at the end; and under the heading of "Gartenbaubetriebe" (nurseries), the many businesses whose title commences with the word (for example, "Gartenbaubetrieb des Parkhotel") are all placed together under the letter "G," instead of being classified according to the name of the establishment. There is a useful alphabetical list of articles used in gardening and florists' work, with addresses where they may be obtained; but we notice that under the heading "Fachpresse" (Technical Press) there is only one name, that of the journal from whose office the Directory emanates, *Die Blumenbindekunst*. As Austria possesses an excellent monthly gardening journal, it seems a pity that this, at least, should not be given a place under the all-embracing title of "Fachpresse," if there is no trade horticultural paper in the country.

Winter Botany.†

THE *Plant Materials of Decorative Gardening* is a book designed for summer use, so that the student may find out the names of the trees and shrubs to be met with in parks and gardens. This is accomplished by means of keys, and the book deals with one thousand trees and shrubs, which, presumably, would include all the more common species, but exclude rare ones, new and recent introductions. In summer, one would have the benefit of flowers, fruit and leaves; but *Winter Botany* has to depend on other characters for the diagnosis of a species. These are chiefly based on bud and scar characters, although evergreens would have leaves, and a few might bloom in winter. Many other characters are taken into consideration, such as, bundle-trace, pith, sap, etc.

The numbered keys run to 463, but as there are always two or three alternative ones, the real number would be between two or three times as large. The leaves or scars may be alternate, opposite or whorled, and the twigs may be striated, furrowed, angled or terete, etc. After two of the keys have been read, the next to follow are the trees or shrubs with whorled leaves (three or more), and these may be

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**Unsere Freiland-Stauden.* Edited by Ernst Graf Silva Tarouca and Camillo Schneider. Vienna, Holder-Pichler-Tempsky A. G.; Leipzig, G. Freytag A.G. Price Rm. 20.00.

**Fertilisers and Soil Improvers. Description, Application and Comparative Value.* By W. Gardner, author of *Chemical Synonyms and Trade Names*; London, Crossby Lockwood and Son, Stationers' Hall Court, Ludgate Hill. Price 7s. 6d. net.

**Spezial-Adressbuch der Gärtner und Blumenhändler Osterreichs.* 1927. Vienna VII, Westbahnstrasse 35, Gustav Baumgartner. Price S.11.00.

†*Winter Botany.* A companion volume to the author's *Plant Materials of Decorative Gardening*, by William Trelease, Professor of Botany in the University of Illinois. Second Edition revised. Urbana: published by the author. Price $2.50.

diagnosed quickly because few. Trees or shrubs with opposite leaves are much more numerous; and those with alternate leaves are still more numerous. The keys lead to the genera, and the index enables the student to find the Natural Order, with a more detailed description of the genus and the species grouped under it. Under Cotoneaster, nineteen species are diagnosed. Here again the key system is used and the work seems easy provided one had ample material. The first division is into those which are evergreen, low and spreading; or deciduous, larger and mostly erect. This implies that one must see the bush. This would be very inconvenient, if the sender of a specimen to be named lived one hundred miles away, involving correspondence.

Having run down a plant to its genus, the reader is helped and assured of its correctness by line drawings of the twigs and their characters. The writer obtained some specimens of Ligustrum ovalifolium and had difficulty in tracing it through the key, owing to the lack of a character only sometimes present. It must be admitted, however, that this is a somewhat difficult example on account of the small size of some of the characters. No Conifers are included in the list, though Gymnosperms are represented by Ephedra, including four species. This second edition has been materially revised, and the drawings are exact.

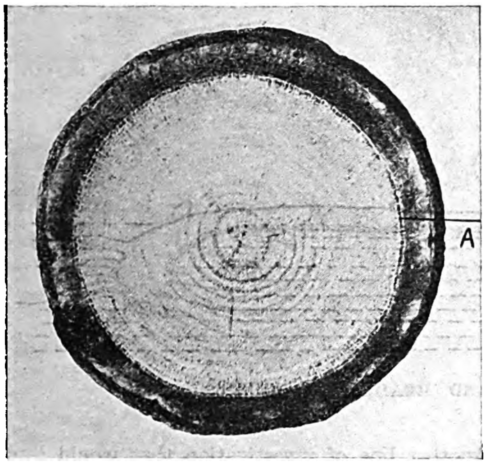


FIG. 19.—DUTCH ELM DISEASE; SECTION OF INFECTED BRANCH.

THE OCCURRENCE OF THE DUTCH ELM DISEASE IN ENGLAND.

An article dealing with the Dutch Elm Disease was published in *The Gardeners' Chronicle* in the early part of 1927 (February 19), in which the characters and distribution of the disease were shortly outlined. The disease was first discovered in South Holland, in September, 1919, and since that date has spread over the greater part of western Europe. Trees suffering from the disease may be readily recognised by the yellow discoloration of the leaves in the crown of the tree or at the tips of the side branches. This condition usually spreads rapidly over the tree and is followed by leaf-fall and, subsequently by the death of the tree. Defoliation may be complete within a week, but sometimes extends over a much longer period. External symptoms of the disease are usually observed about the beginning of June. Sometimes a tree which has lost all its leaves early in the year may produce a second crop of leaves late in the season, but these are smaller and soon fall. Dying trees often produce large numbers of leafy shoots at the bases of the branches and on the main trunk. Infected branches, when cut across, show one or more rings of small brown spots in the most recently formed wood (Fig. 19 A.). If the bark is peeled from such twigs, longitudinal brown streaks are observed, which correspond to the brown spots in cross section (Fig. 20). These internal symptoms can sometimes, but not invariably, be found in the roots.

As a consequence of the serious nature of the disease and its wide distribution on the Continent, orders have recently been made by the Ministry of Agriculture, and the Board of Agriculture for Scotland, prohibiting the importation of living Elm plants into Great Britain, in the hope of preventing the introduction of the disease. This hope, however, has not been realised, for an outbreak in the neighbourhood of London was discovered last July. It is probable that the infection was already present in 1926, for in that year a number of Elms were reported to have died in the vicinity; these showed a discoloration of the leaves early in June, which was rapidly succeeded by leaf-fall and death of the tree. The trees were cut out, but, unfortunately, no examination was made, as at that time there was no suspicion of the presence of Dutch Elm Disease in Britain. In the early summer of 1927, another large tree died, showing similar symptoms, and, when felled shortly afterwards, showed the characteristic internal appearance of the disease.

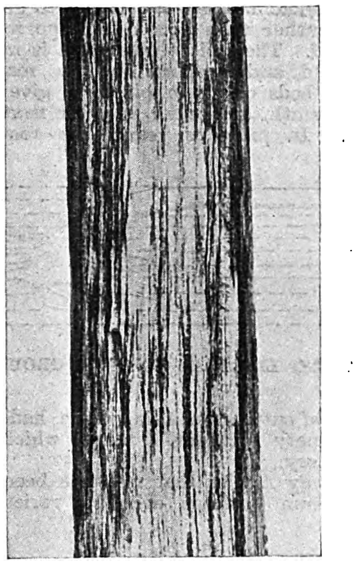


FIG. 20.—DUTCH ELM DISEASE; CROSS SECTION OF INFECTED BRANCH.

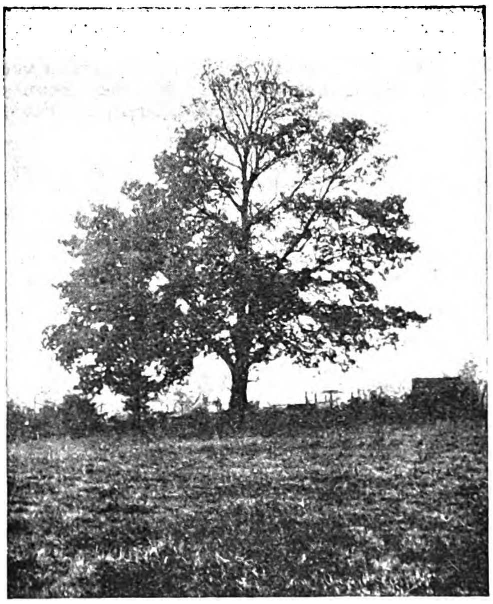


FIG. 21.—DUTCH ELM DISEASE; A TREE INFECTED ON ONE SIDE.

During the investigation in July, it was observed that a neighbouring tree showed discoloured leaves in the crown; when examined in October, it was found that the discoloration had become intensified and had extended to almost all the branches on one side of the tree (Fig. 21). All the infected branches, when cut across, showed the characteristic ring of brown spots in the wood, but this was absent in the roots.

Considering the severity and rapid spread of this disease, it is indeed remarkable that the cause of it should remain uncertain, this, too, in spite of the researches of several well-known pathologists both in Holland and Germany. There are at present three distinct opinions on the subject:—(1) That the disease is caused by a fungus, Graphium ulmi, Schwarz; (2) That the causal organism is a bacterium, Micrococcus ulmi, Brussoff; (3) That the epidemic is not due to any parasite, but is a result of unfavourable weather conditions, such as drought or severe cold. The majority of the investigators, however, now consider that it is caused by the fungus Graphium ulmi. This fungus is characterised by the production of small coremia, which consist of a black stalk and enlarged head; the latter bears vast numbers of minute spores, which are embedded in a translucent drop of mucilage (Fig. 22).

Specimens from the infected tree near London were carefully examined, and cultures were made from the discoloured wood. Graphium ulmi developed in eighty per cent of the latter, but, in addition, bacteria appeared in a large proportion of the liquid cultures; most of these organisms were cocci, but rod-shaped bacteria were often present in small numbers. These results show a marked similarity with those obtained from authentic continental material. Further, the history of the death of these Elms near London, and the symptoms exhibited by the large trees examined there, are, in every detail, characteristic of the Dutch Elm Disease. These facts alone should be sufficient proof of the identity of the disease, but the evidence is strengthened by a recent publication by Dr. H. W. Wollenweber, a well-known mycologist in Berlin, whose infection experiments appear to prove conclusively that Graphium ulmi is the cause of the disease. The fact that this fungus was isolated in eighty per cent. of the cultures made from British material is, therefore, particularly significant.

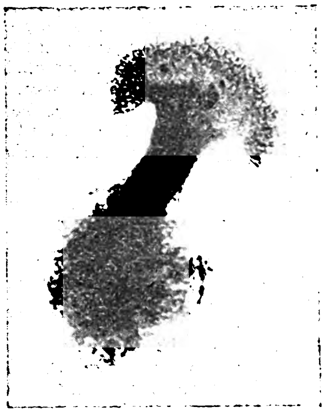


FIG. 22.—DUTCH ELM DISEASE GRAPHIUM ULMI.

Some account of the damage caused by this disease on the Continent was given in the previous article, and later reports have emphasised the extremely serious nature of the epidemic. It is present throughout the whole of Holland and shows no sign of becoming less virulent; the situation in Belgium and in western Germany is almost similar. The Dutch authorities are attempting to remove the dead and most heavily infected trees, but they are unable to keep pace with the spread of the disease. In Holland, Elms have been largely used for planting on the dykes and in the towns, but, as a result of the disease, the planting of these trees is being discontinued.

No species of Ulmus planted in Holland

appears to be immune to the disease, but the resistance to attack varies. Although it has been stated that other trees are liable to infection, there is no definite proof that the disease attacks any species outside the genus Ulmus.

Various methods of control have been attempted on the Continent. Autumn pruning of diseased branches has not been successful, and spraying has also proved ineffective. If the infection is at an early stage, and only isolated trees are attacked, removal and destruction by burning of the whole tree, including the roots, may check the spread of the disease.

Up to the present time there is only the one record in this country, and the infection, as yet, is not very severe, but, judging by the rapidity with which the disease has spread on the Continent, it is highly improbable that it will remain confined to this one area. If a calamity similar to that which has occurred in Holland is to be avoided, measures should be taken at once to control the disease, and for this purpose it is necessary to know whether there are any other outbreaks in the country. All suspected cases should, therefore, be reported without delay. *Malcolm Wilson and M. J. F. Wilson, Mycology Department, University of Edinburgh.*

FRUIT TREES ON THEIR OWN ROOTS.

THOSE who work in the scientific side of horticultural development have been anxious to see how varieties of fruits grow on their own root-system. So far, no satisfactory method has been devised by which trees may be raised from cuttings, nor any system of propagation to produce trees in quantity on their own roots. In many of our research stations trials of various methods have been made to produce trees of this character, but with little success. When visiting the Danish Plant Breeding Station at Blangsted in October last, I was surprised to find in progress a system that produced Apple trees on their own roots in large quantities, and with little trouble to the cultivator. The system was applied to Apples only, but I was told that it was equally successful with Plums and Pears.

Mr. Niel Esbjerg, the head of the Station, stated that the system was discovered in a research station in Finland. A maiden, one-year-old Apple tree, is planted so that the stem lies on the surface of the soil (Fig. 23). The shoots from this stem grow upright, and when they are about fifteen inches high, a piece of thin copper wire is placed twice round the base of each shoot, and twisted somewhat tightly. They are then moulded up in the same way as fruit-tree stocks are moulded up for rooting. As growth proceeds the wire cuts into the bark, and causes a thickening of the cambium tissue immediately above the ligature. From this thickened tissue roots are emitted; eventually the rooted shoots are severed below the roots and transplanted in a nursery. Bramley's Seedling, Lane's Prince Albert and Cox's Orange Pippin Apples had all rooted freely under this system. With most varieties, a period of two years is necessary to obtain satisfactory roots.

When the trees are well-established and a further increase of the variety is desired on its own roots, the trees are taken up and roots of the right thickness for propagating are cut off and made into root-cuttings. These cuttings are rooted in frames, and last season they had made about eighteen inches of growth. There were many failures among the cuttings during 1927, and Mr. Esbjerg considered the failures were due to the cold season, as the Danish summer had been cold and dull. In the early summer the cuttings had budded and begun to grow; the dull weather then caused a large number to damp off. The soil at Blangsted is rather stiff and cold, and preparations for making the cutting beds on drain pipes, to give drainage and warmth, are under way for next season's work. In previous years, the rooting and growth of cuttings on this system had resulted in a ninety per cent. "take," which is very satisfactory.

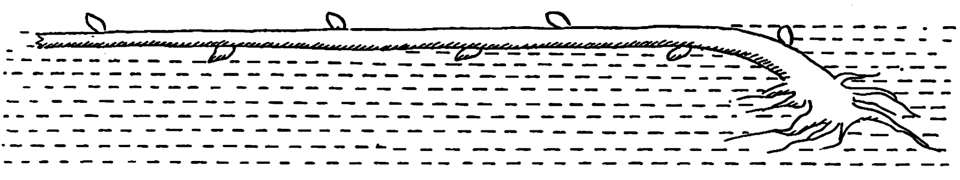


FIG. 23.—MAIDEN APPLE TREE PLANTED SO AS TO LIE FLAT ON THE GROUND.

The only Apples that we have been able to strike from cuttings are the varieties that naturally produce adventitious roots on their stems, *e.g.*, Codlins, and Warner's King. The choice varieties have always given barren results under our efforts to reproduce them on their own roots.

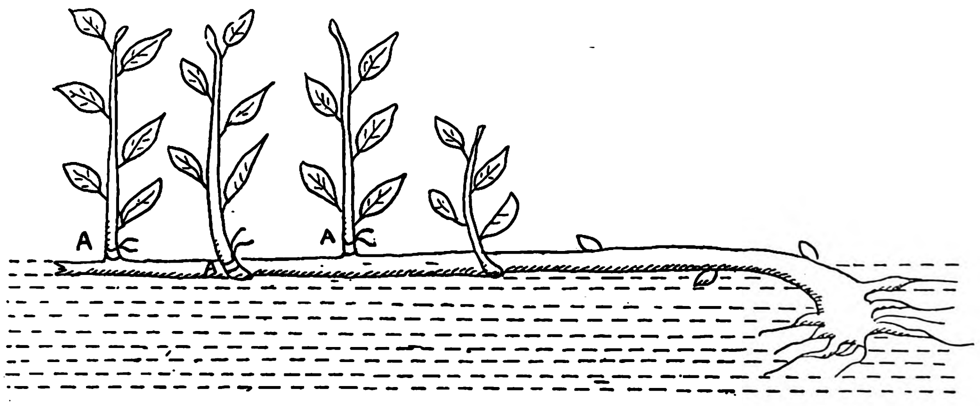


FIG. 24.—APPLE TREE GROWTHS WIRED READY FOR MOULDING UP.

I have seen two original trees of garden varieties, Sandringham and Norfolk Beauty. In each case the habit was different to that of the variety worked on stocks. A variety growing on its own roots will show its natural habit, and this may prove an advantage in many ways. Without any extraneous influences at work, the true reaction to spray fluids could be ascertained, and the variety's actual susceptibility to insect pests and fungoid diseases determined. Further, the true influence of stock on tree growth, by comparison with normal trees on their own roots, could be determined with precision, and in many directions information could be gained that would be of practical value in the development of fruit culture.

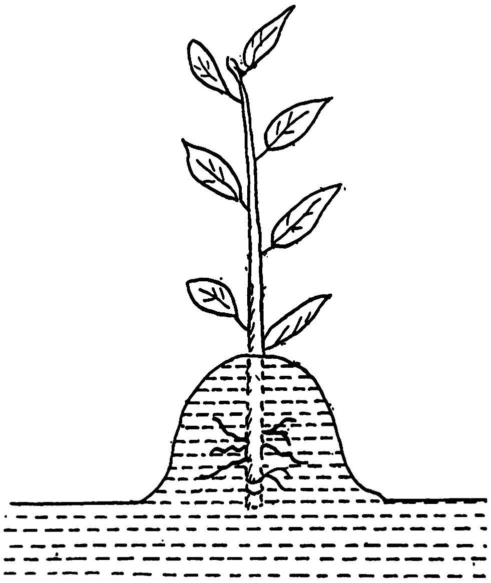


FIG. 25.—APPLE GROWTH, MOULDED UP AND INDICATING ROOT FORMATION.

One subject worthy of note is the problem of colour in Apples. For several years we have noticed that Bramley's Seedling top-grafted on Worcester Pearmain gave fruits of better quality and colour than when the variety is growing on the usual stocks. Following this observation, one cultivator planted twenty acres of Worcester Pearmain on Crab stock, and in the second year top-grafted the whole with Bramley's Seedling. Now that we may raise Worcester Pearmain as a stock, there is an opportunity of working Bramley's Seedling directly on to that variety. From what I have noticed of the combination of the two varieties, the influence on the colour in the fruit would be decidedly beneficial from a sales point of view.

Another line of investigation that would lead to results of practical utility would be a consideration of the typical root-systems of varieties; these, no doubt, are as varied as stocks. None of these problems are understood, as hitherto we have failed to produce trees on their own roots. *H. Goude, Norwich.*

MARKET FRUIT GARDEN.

THE year 1927 maintained its rainy character right to the end. The rainfall for December was no less than 5·46 inches, the heaviest recorded during any month in the year. There were seven consecutive wet days around Christmas which contributed 4·70 inches towards this total, producing more extensive flooding than I have ever seen before in the district. The total rainfall for the year amounted to 41·01 inches, making 1927 the wettest year since records were first taken on my place in 1901. The nearest approach to it was 1924, which had 37·40 inches of rain. Only four months of the past twelve showed less than the average rainfall, these being January, April, May and October. It was very fortunate that May was included amongst these, for a dry May means much to the fruit-grower. It is to this, no doubt, that I must attribute the cleanliness and high quality of my crop of Apples, the brightest feature of the season. It is curious that such a wet season should have been the most successful I have had since 1922. There was a heavy crop of Black Currants, even if prices were low; and Plums, much to my surprise, turned out to be slightly more plentiful than in the previous year, entirely owing to the bountiful yield of two early varieties, Rivers' Early Prolific and Czar. But Apples were the mainstay, these being a thoroughly good crop for both quantity and quality. Although cooking Apples were cheap throughout the season, clean, well-coloured samples of dessert varieties made exceptionally high prices, such samples evidently being scarce. Results would have been still better had the average size of the fruits been more satisfactory; but Apples, particularly choice dessert varieties, always tend to be small in a sunless season. The most surprising thing to me is that the trees look so well after such a year. One expects to pay for so much wet in the following season; yet Apples appear to be particularly well studded with fruit buds. A good show of bloom would seem to be certain, but one hardly dares hope that the trees can be in the right condition to set another good crop.

Winter Spraying.

A start was made with winter spraying with tar distillate in December, but frost soon put a stop to the work. I am very anxious to push on with it, as I have planned to spray every tree and bush on the place this season. The trees have been done for several years, but never the bushes. Now that we seem to have to expect a serious attack of aphis every year on Black Currants, it is quite worth while to spray this crop. From what I have seen on other fruit farms, I consider that tar distillate shows its maximum results on Black Currants, the bushes looking delightfully clean and vigorous after treatment. I am fully convinced of the supreme value of tar distillate for Apples and Plums, and would not omit this spraying for any consideration. The old nightmare of attempted pest control around blossom time, often with very partial success, is, fortunately, a thing of the past, and one is free then to deal with Apple scab. A few caterpillars are likely to survive the winter spraying, but these are easily dealt with by adding arsenate of lead to the fungicides used in spring. Tar distillate wash was received with much caution and scepticism, but there are few growers now who do not admit its value. Some, however, have been forced to the conclusion that they have depended too much on this winter spraying, with the result that certain pests, particularly serious in their locality, have increased. I know of one case in which clay-coloured weevil does serious damage to several crops; and the grower has decided that he will have to return to the use of contact washes around blooming time for the control of insects. Then there are the unfortunate growers who live in districts where capsid bug is prevalent. Tar distillate does not control this to any extent, so there is no escape from the use of soap and nicotine applied shortly before the opening of the bloom.

Winter spraying is still an advantage, because it controls aphis, and, the leaves being sound and uncurled in consequence, the capsid bugs are more easily dealt with. But it is a question for each grower to decide whether, in this case, he can withstand the double expense. Evidently the planning of the year's spraying campaign is a matter which must be worked out locally, according to the troubles which have to be expected. In some districts it would probably be wise to spray only one-third of the plantations each year with tar distillate, so that all the trees receive the treatment once in three years, and to depend on spring and early summer spraying for the rest. As things are at present, in my own district, tar distillate controls all my worst enemies, except scab, and I shall continue with annual spraying so long as this is the case. So far, I am free from capsid bug; but I am beginning to be nervous as to how long this immunity will be enjoyed. The pest is widespread in the neighbouring county of Kent, and is now reported as being serious in the western part of my own county.

Pruning Stunted Trees.

Printed instructions on pruning always assume that the trees are fairly young and making a certain amount of annual growth. The reader is never told how to prune trees which have become covered with fruit spurs, and have practically ceased to produce shoots. Perhaps it is contended that a tree should never be allowed to get into this condition, and that it would not do so if the proper pruning were given whilst it was still making growth. I fancy, however, that a more likely reason is that no one has taken the trouble to find out which is the best method of getting such trees to grow again. Hard cutting back is supposed to be the remedy for lack of vigour; but if there is no fairly young wood into which to cut, this does not always answer. It has been my practice, in such cases, to cut back into the branch to a dormant bud, if one could be seen, and clear the end of spurs for about six inches. In some cases there is a fairly good response to this treatment, but by no means invariably. I have in mind particularly a block of Beauty of Bath growing in grass. This variety is always liable to unbalanced growth; some of the branches continue to make a little growth, whilst others become a mass of spurs and cease to grow entirely. I should not mind this if I could rely on manuring to keep the spurs vigorous enough to make a little extension and continue bearing. I do not really want the trees to grow any bigger; but the danger is that such branches will gradually die back. It seems to be necessary to force them to make a little growth, even if it is only three inches a year. Last winter much hard cutting back was done to these trees, the tips being cleared of spurs as described. In some cases a terminal shoot has been produced as a result, and the obvious course will be to prune this and endeavour to keep it growing; but in many cases the stimulation of hard pruning has been sufficient only to produce a few prominent buds. Possibly these will push out some shoots during the coming season, in which case all will be well; but I am rather afraid they will develop into fruit spurs instead. I shall watch them with interest.

Meanwhile, I am going to try another method with some of these stunted branches. This will consist of what has become known as the "hat-peg" method of pruning, which means cutting back so as to leave a stump or snag a few inches long. I am fairly confident that there will be a response to this in the shape of rank shoots which can be treated to form new branches. What makes me think so is that the trees often throw up strong shoots from the stems and bases of the branches, where there is no room for them. There is apparently vigour in the trees, but it is "bottled up." Another possible method, which also is being tried, is merely to thin out crowded growth and reduce unwieldy spur clusters, and trust to heavy manuring to force a little growth, after which annual cutting back can be resumed. If all else fails, the grass will have to be broken up, either with the plough or by pigs. Cultivation combined with manuring will nearly always produce growth. I am loth to do this, because, in my conditions, grass is very valuable for giving colour to dessert Apples. Those grown on trees in cultivated ground are comparatively worthless when it comes to selling them. I have seen stunted trees, especially Plums, respond marvellously to "pigging."

Artificial Fertilisers for Fruit Trees.

For fruit trees in grass I rely entirely on chemical fertilisers. I believe in giving a balanced dressing, not because I expect to see any direct result from anything except nitrogen, but because trouble (particularly leaf-scorch) must be expected to appear as time goes on if nitrogenous manures alone are used, and because nitrogen cannot continue to show results if other plant foods are allowed to become deficient. Previously, I have manured more or less by guess-work, little else being possible, since we know so little about the actual requirements of fruit trees. This year, however, in planning my manuring, I have made some attempt to find out what is required. Naturally, one looks to Long Ashton Research Station for guidance on this subject, since the most notable work on the manuring of fruit trees has been done there. Definite conclusions have not yet been arrived at; but I find that in the famous experiments of the manuring of Gooseberries, the manures were chosen so as to supply 50 lb. of nitrogen, 120lb. of total phosphates, and 50lb. of potash per acre each year. This has answered very well for the Gooseberries, and so may be taken, perhaps, as being as near as we can get in the way of a balanced dressing for other fruit crops. Such a dressing could be made up by mixing 3 cwt. of superphosphate (35 per cent.), 1 cwt. of sulphate of potash, and 2 cwt. of sulphate of ammonia; or the nitrogen could be obtained from 3 cwt. of nitrate of soda applied separately from the other two manures.

Where the trees are liable to suffer from leaf-scorch, and lack of potash is thought to be the reason, the sulphate of potash should be increased to 2 cwt. per acre. My soil is particularly lacking in potash, and I have found that potash does reduce leaf-scorch decidedly. I feel sure that I ought to have used it more regularly in the past. I am advised that, at the beginning of the treatment of severe leaf-scorch, 3 cwt. or even 4 cwt. per acre of sulphate of potash may be used for a year or two. I am going to apply this amount for some of my trees within the next few weeks. *Market Grower.*

VEGETABLE GARDEN.

LETTUCE.

There is always a demand for well-grown, early Lettuces. If seeds are sown in boxes in moderate heat, germination is quick and if the boxes are covered with glass or paper, the covering must be removed so soon as the seedlings are visible. Many failures may be traced to neglect of this matter. The young plants should be pricked out in boxes filled with a rich compost.

Some of the non-hearting varieties will quickly produce heads fit for use. A succession may be maintained by frequent sowings, according to the demand of the establishment.

Where material is available for making a hot-bed, excellent Lettuces may be grown upon them during the spring, provided air is admitted on suitable occasions, as crops raised on hot-beds are liable to failure in an over-heated, stagnant atmosphere. Overcrowding must also be avoided, as the young plants are liable to damp off; dusty charcoal sprinkled between the plants will assist in warding off damp.

Successional crops may be raised in cold frames or under hand-lights, and so soon as weather conditions will allow a small sowing should be made on a sheltered border.

Lettuces may be grown on any moderately good land, but to produce really high-class material during a dry summer, special attention must be given. Manure dug in while green, during the spring, has been found very beneficial on light soils. Varieties are numerous, and a selection can be made to suit all tastes. While some of the dark green varieties of Cabbage Lettuce withstand considerable drought, they do not always find favour in the kitchen. *C. R., Beds.*

HOME CORRESPONDENCE.

Birds and Fruit.—It was indeed flattering to have been selected from your other correspondents for the personal diatribe of Mr. A. T. Johnson; indeed, the only grub in the Rose-bud was that he did not extend further over the range of my letter, together with regret that he was not here to join in the merriment his letter aroused. It seems that my premiss—the dependence of my remarks on a repetition of the one-sided observations of Mr. Collinge, was well-founded. So the vole and the field mouse are to go. The damage they do is well thought out for their own good—how different from the wanton mischief of the tit on a very unripe Apple or Pear! Stay, perhaps some of the pseudo-scientific apologists for the bird will relate to us some such conversation as:—Saith pa-tit to ma-tit, "My dear, you are looking a bit ricketty! You want Vitamin Z; I, too, have a bit of peribeakitis, and should be better for some. You get some from Apple rind, and I will from Pear rind, and we will see which is the more effective." If the depredations were of some use, possibly one would not grudge the tits a few cubic millimeters of fruit. Thus we have some fifty to eighty starlings descending on the fruit when ripe; the damage they do is annoying and one has to harvest the fruit untimely, so that it keeps not well in store—still they do make some use of it. How selfish! Mr. Johnson would say. By the way, some twenty of my Pears go to friends to every one that my selfish self consumes! So the stoat is to live (what was found in its stomach ?), and the tit is to live, and the vole is to die, in the scheme of "live and let live." But there is another aspect of the question needed to complete judgment: that is, actual observation of what the birds do. I happened to raise a seedling from a Siberian Crab, which, *pace* Thomas Andrew Knight, should have had peculiar resistance, but which, in fact, was the most susceptible tree to woolly aphis that I have come across; it was simply smothered, and hence was kept for divers observations to be made upon it. For one, it was conveniently situated for the observation of birds' visits. I once saw a young flycatcher working a little upon it, but the adult birds kept to more sportive hunts in the air; the hedge sparrow and the wren would spend much time in it, and no doubt did an almost appreciable amount of aphis destruction; tits came there too, but, like the modern child, they very, very, very soon were tired. One peck, or perhaps two, and they were off; the amount of destruction of the woolly aphis by them was to all intents and purposes nil. They were also observed upon another tree from time to time, and here a good amount of clearance was effected —but not by tits; the tree-creeper was the active helper and acted in a workman-like way, inch by inch. But, all round, the birds work on the "live and let live" basis as regards annihilation of woolly and other aphides. Barham tells us:

> "Saint Aloys
> Was Bishop of Blois,
> And a pitiful man was he, . . .
> He would rescue the rat
> From the claws of the cat,
> And set the poor captive free;
> Though his cassock was swarming
> With all sorts of vermin,
> He'd not take the life of a flea!— . . ."

Since your correspondents do not appear to share the feelings of the goodly saint, can we not have an *Index Expurgatorius* of the beasts and birds, so that we may know which to destroy and which to protect? In the war-time, I put down a breadth of Buckwheat to supplement the sawdusty ration of our fowls; as the seeds ripened, green linnets appeared in such numbers that instead of the fowls getting a good half-hundredweight of food, they got hardly a hatful—I gather that the fowl is to die (and be boiled if old), whilst the linnet would be encouraged to survive! With regard to bags, it rather seems that the dressing of the brown gauze bags (made in France, I think) with a string and bit of rubber to attach them by, is repellant, for new bags are better protection than old, weathered ones; some wax is used in the dressing apparently, and I think of dipping old ones in a brew of turpentine-wax and petrol (to dilute the turps)—perhaps some further addition might be suggested—Aloes or Quassia would be too liable to wash off, and something fairly permanent would be required. Where large-sized bags can be used, for instance, so as to cover whole pieces of branch, or in saving herbaceous seeds, it is far more convenient to make them in tube form; the whole is rolled into a ring which is easily slipped on and then straightened out and tied at the ends, or more rapidly attached by clips cut from sheet lead. I use a sort of brown gauze for these—is it called scrim? I forget. If you soak such material in soap solution, dry, and then soak in copper sulphate, it becomes rot-proofed—but there is enough copper liberated during the season to make bad marks on Cox's Orange Pippin and other copper-susceptible kinds. *H. E. Durham, Sc.D.*

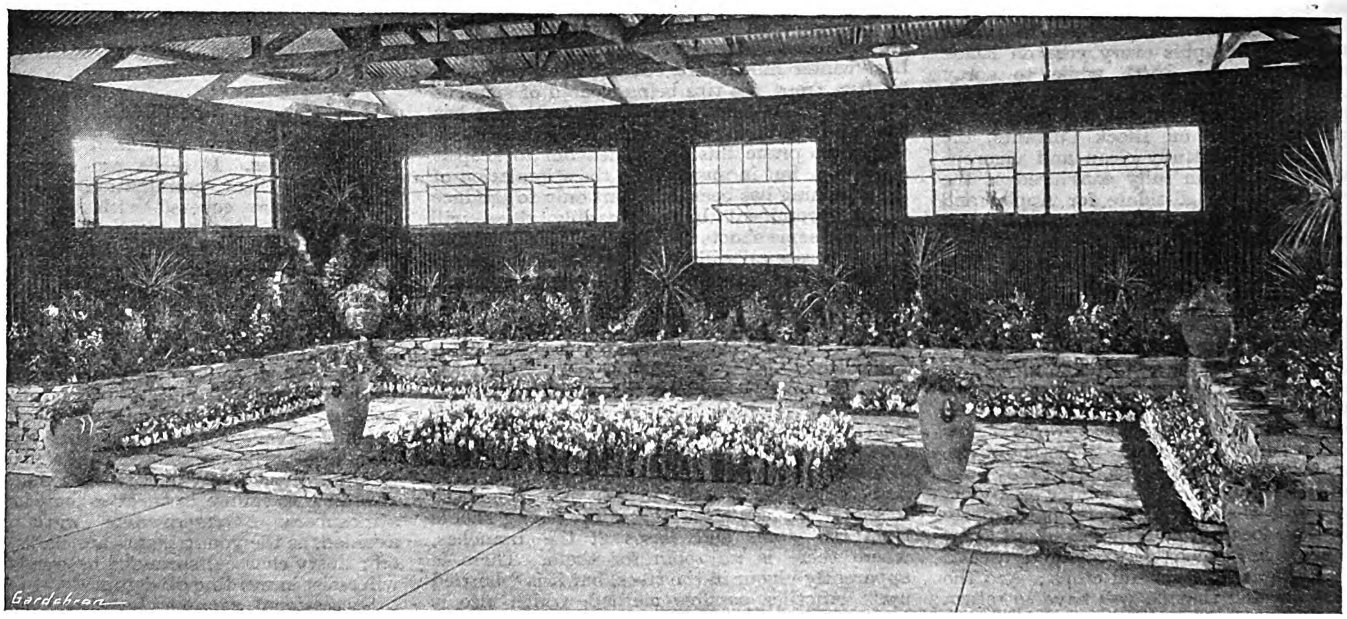

Gardchron

FIG. 26.—A FORMAL GARDEN EXHIBIT AT PRETORIA.

Erodiums.—Perhaps better known as the "Heron's Bill," these near relatives of the true Geraniums include many charming, low-growing subjects for the rock garden. The variety E. chamaedryoides rosea is one of the best, and has pretty, serrated leaves and attractive rose-pink flowers, often deeply veined with a darker shade. This also makes a good pot plant for a cool house, and will flower profusely up to Christmas. I find it thrives best in a good, light soil, and a sunny position in the rock garden. *W. S.*

Superphosphate and Peas.—I am obliged to your correspondents, *Mr. Gavin Brown* and *W. P. W.*, who, on page 527, Vol. LXXXII, bear out my statement that it is not good practice to bring artificial manures into direct contact with seeds or plants. *W. P. W.* considers I am probably wrong about damage to Potato sets. I will give the instance that came under my notice, and although it occurred years ago, it is quite fresh in my memory. The varieties grown were the old Champion—incidentally the best-flavoured Potato I ever tasted—and Pink Eye (I do not know if the latter had any other name, but that is the only name I ever heard used for it). The ground, after cleaning, was drilled with a plough, farm-yard manure spread in the bottom, and superphosphate sown broadcast over all; the sets were cut, planted cut-side down on the manure, and covered in by splitting the drill with a plough. Many of the sets failed to grow, and on examination were found to have rotted, while the crop lifted was badly diseased. The losses and disease were attributed to the artificial fertiliser. Kainit might have been mixed with the superphosphate, but of this I am not sure, although I know my father had a great belief in kainit, and used it liberally for all his crops. I consider it safest to fork these manures into the ground before the drills are drawn; I tried putting them in the drill on a short row of Peas purposely, and found many of the seeds rotted. *Grigor Roy, Cobham.*

Virgin Mary's Bean.—When reading over the Rev. Hilderic Friend's article on "The Madonna Garden" (*Gard. Chron.*, December 17, p. 490), I was interested in his remark that there is a Bean grown in the Isle of Harris called the Virgin Mary's Bean. As I lived in the Isle of Harris for several years, I should very much like to know to what Bean he refers. The only Bean I ever saw, or heard of, as being grown in the Island was the French Bean, in private gardens. There is a smaller island in the bay named Soy; I tried to find out how it got that name, and if it had any connection with the Soy Bean, but no one could enlighten me. *Grigor Roy, Cobham.*

FOREIGN CORRESPONDENCE.

A Formal Garden Exhibit at Pretoria.—I send herewith a photograph (Fig. 26) which may interest your readers. It depicts an exhibit which the Parks Department made, by special request, at the Eastern Suburbs Horticultural Society's spring flower show. The exhibit was a small, formal garden with a sundial in the central recess, but at the time the photograph was taken the sundial had been removed. In the centre was a bed of rosy-pink Antirrhinums, bordered by Germiston Grass (Cynodon transvaalensis, Burt Davy). The narrow border at the foot of the wall was planted with dwarf Petunias, with a border of Centaurea candidissima. In the bed above the wall there were mixed herbaceous plants, Dracaenas and dwarf shrubs. The large earthenware pots were filled with Ivy-leaved Pelargonium Charles Turner—a beautiful rosy-scarlet. *J. E. Repton, Princes Park, Pretoria, Transvaal*

SOCIETIES.

ECONOMIC BIOLOGISTS.

At the December (1927) meeting of the Association of Economic Biologists held at the Imperial College, Dr. G. H. Rodman gave an interesting account of "Insectivorous Plants," illustrated by a remarkable series of photographs taken, for the most part, from material grown at the Tropical House at Kew. The wealth of detail about the habits of these fascinating plants, which he has gathered together as a result of a series of careful observations, made the lecture noteworthy.

Of the five hundred or so plants which are known to have evolved this strange method of obtaining nourishment, three genera are represented in the British flora—Drosera (the Sundew), Pinguicula (the Butterwort) and Utricularia (the Bladderwort). The leaves of Drosera are covered with short hairs terminating in globular, glistening glands, which secrete a sticky, fluid whose flavour attracts insects, and whose viscid nature helps to hold them fast. Struggles to free themselves cause greater entanglement, and the longer, tentacle-like outer hairs, which grow towards the margin of the leaf, bend over the insects and secure them. The spiracles are blocked by the glutinous secretion, and the insect dies of asphyxiation.

The inflection of the outer hairs of the leaf is the result of a stimulus caused by contact of some foreign body with the inner glandular ones. So small a quantity as one-thousandth milligramme of nitrogenous matter, ammonium sulphate, for example, is a sufficient stimulus to cause movement. Glass or coke will induce similar movements, as will also a stream of water directed from the side, although, on the contrary, water falling vertically, such as drops of rain, will have no effect. The tentacles nearest the foreign body are the first to come into action, but the stimulus spreads until all have bent over. The leaf, meanwhile, becomes more concave, the secretion of fluid is increased, and, if the substance captured is nitrogenous, the fluid changes from neutral to acid in reaction and an enzyme closely resembling pepsin is secreted. This is instrumental in digesting the protein matter in a similar manner to the same process in the human body. The products of digestion are absorbed by the leaf, which finally unfolds again in preparation for another meal, leaving on its surface any indigestible remains, such as the chitinous exoskeleton of an insect. The Drosera-leaf can easily digest such tit-bits as small pieces of steak, egg, soup or bovril.

Drosera capensis, L., a South African representative of the genus, with long, narrow leaves, is remarkable for the way in which the leaf twists round the insect, and for the curious manner in which, if the prey is unusually large, this information seems to be conveyed to the other leaves which bend over and also twist round the struggling insects. In this way butterflies and dragonflies are sometimes caught and killed. The largest fly seen to be trapped at Kew was an Anthomyia.

Some interesting details were given of the method of photographing Drosera leaves. It has long been known that an induced electric current will cause movement of the tentacles; the influence of the electric light used in taking the micro-photographs is almost identical, and blurring of the negatives is the result. To obviate this the leaves must be severed and left for eight to nine hours; if for a longer period wilting will occur. The glandular hairs of Saxifraga umbrosa, L. (London Pride) show similar movements when an attempt is made to photograph them. This led to the suspicion that this plant too, might prove to be insectivorous, and it is a remarkable fact that Darwin, whose work on Insectivorous Plants still repays careful study, stated that Saxifraga umbrosa was, perhaps, to be classed as such. An examination of plants of London Pride growing on the rock garden at Kew showed several instances of entrapped insects, including an aphis and a gall-midge. The suggestion was put forward that this might be the explanation of the success with which London Pride may be grown in a tenement window, with a little moss and scarcely any soil.

Drosophyllum lusitanicum, Link, is so effective in its insectivorous habit that the cottagers round Oporto use it, during the summer, as cheap and effective fly-paper. Here there is no movement of tentacular hairs, the prey being captured by the extreme stickiness of the secreted fluid.

Pinguicula vulgaris, L., is known as the Butterwort, because it is greasy to the touch. It has poorly developed roots and glandular hairs on the leaves, similar to those of Drosera. The edges of the leaf curl over to enclose the captured insect, which is then digested in the manner described for the Sundew. A specimen of Pinguicula kewensis, a hybrid, was once found with 530 captured insects.

Among the exotic genera which have formed the insectivorous habit, Nepenthes, (Pitcher Plants) is one of the best-known. These are epiphytes and climbers, often brilliantly coloured, and are most abundant in Malay and China. Tendrils terminate in the well-known pitchers, which vary in capacity from a thimble to a pint-pot. One eighteen inches long, large enough to drown a small mammal or bird, has been recorded from Borneo. Insects are attracted by nectar, which is especially abundant on the undersurface of the lid. N. Lawrenceana has a row of hairs on the outside which seems to act as a kind of stairway for the insects, making entrance easier, the honey increasing in abundance all the time until the dangerous rim is reached. Once inside, a row of curved hooks prevents the luckless insect from crawling out again. In N. Dicksoniana, Lindsay, the upper zone of the inside of the pitcher is covered with an unwettable wax which balls on the foot of the insect, much as snow on a man's boot, until foothold becomes very precarious. The liquid inside a young pitcher is a viscid fluid which turns acid and becomes charged with pepsin after insects have been caught. An old pitcher no longer contains liquid; at the bottom of it is to be found a snuff-like powder, the chitinous remains of the victims. Many ants are to be seen hurrying about the pitchers, but they are seldom caught, for they bore in near the base of the pitcher and make away with the nectar without running any risk. Several small snails were found in the pitchers. These were probably carnivorous, and had been attracted by the decomposing animal remains in the pitchers. Spiders are also frequent victims, and it may be beneficial to have the Nepenthes collection near the Orchid House, as they seem to attract the spiders away from the latter, where they are a great pest. A small monkey is said to have been caught by the head whilst drinking out of a pitcher of N. bicalcarata, Hook. fil., and a pressman in Pennsylvania was seen to introduce a rat into one in order to take a "Nature-film" which has since been widely exhibited.

The Sarracenias of North America have leaves with the margins united to form a funnel. They seem to be much more selective in what they catch. In one specimen four dead queen-wasps were found. Common midges and gnats are apparently not attracted, but juicy flies, such as the common Bluebottle, are constant victims. Probably there is no secretion of an enzyme, but the plant absorbs the products of bacterial decomposition. In Darlingtonia there is a twist in the pitcher near the entrance and, once inside, the way out is apparently difficult to find.

Dionaea muscipula, Ellis (Venus' Flytrap), is, perhaps, the most fascinating of all insectivorous plants. The leaf has a leathery, bilobed blade with marginal teeth. The lobes close together like the leaves of a book, and the teeth interlock. When the plant is most active, at 80° to 90°F., a distinct click can be heard as the leaf closes. Three tiny, slender hairs are arranged in a triangle in the centre of each lobe. These are very sensitive and act as triggers for the closing mechanism. Strangely enough, two successive touches seem to be necessary to make the mechanism work. Once the leaf is closed it cannot be pulled open again without tearing it. Occasionally, if the insect caught is extremely small, a leaf has been seen to open again, and the insect to fly away unharmed. After three meals the leaf generally ceases to function, but it will often decompose after one exceptionally large one.

The lecturer is particularly to be congratulated on his very fine series of lantern-slides, which must be the result of much patient photography.

Obituary.

Mrs. J. Roberts.—We regret to announce the death, on the 27th ult., of Mrs. Roberts, wife of Mr. John Roberts, of Gelligrin, Maentwrog, North Wales, who for forty-six years was gardener at "The Plas," Tanybwlch. Mrs. Roberts had been a great sufferer for some years, but will be remembered by the many gardener and other friends who were fortunate enough to visit the famous gardens made and maintained so long under Mr. Roberts' supervision, as a kind and most hospitable hostess. We offer our heart's sympathy to Mr. Roberts and his daughter in their grief.

Will Tayler.—For many years a nurseryman at Hampton, Middlesex, and very well-known in the London district, Mr. Will Tayler, retired from business and went to reside at Godalming in 1919; here he continued to cultivate fruits and developed his new Joy Bells Apple, a variety that obtained an Award of Merit fron the Royal Horticultural Society in 1922. Mr. Tayler suffered greatly from deafness, and for a long time past had been in ill-health. He died at Godalming on December 31. He was a vegetarian and a staunch advocate of food reform, frequently contributing articles on these subjects to the local press. In former years he was a frequent exhibitor of fruits at the Royal Horticultural Society's and other shows. He was also keenly interested in Roses and served on the Council of the National Rose Society and was rarely absent from its annual meetings. The funeral took place at Godalming and was attended by a large number of old friends and by representatives of the various societies to which the deceased gentleman belonged.

ANSWERS TO CORRESPONDENTS.

CHRYSANTHEMUMS FOR MARKET WORK—*S. H. G.* Choice varieties for October are Blanche du Poitou, Cranfordia, Uxbridge Pink, Sorcerer, Bronze Uxbridge, and Colette Harris. Varieties for November are Marne, Jean Pattison, Ivy Gay, H. W. Thorp (Incurved), Golden Wonder and Alfred Durban. Varieties for December are The Favourite, Pink Favourite, Miss Wilcox, Golden Butterfly, Dr. Enguehard and Terra Cotta. Varieties for sprays are White Cheer, Star of Gold, Red Sunshine, Dainty, Cissbury Pink, and Source d'Or. These flower at different times. Several of the others may also be grown in sprays, such as Miss Wilcox, Golden Butterfly and Blanche du Poitou. All may be planted out and lifted, but some good growers consider that the best quality of disbudded blooms is obtained by growing them in pots all the time. October-flowering varieties should be lifted about the middle of September or earlier. Market prices can always be ascertained from *The Gardeners' Chronicle*. If you are a nurseryman you would be able to get *The Market Grower and Salesman*, at 7, 9 and 11 Theobald's Road, London, W.C.1, which is a private trade paper.

NAMES OF PLANTS.—*C. A. C.* Cineraria maritima.—*J. P. I.* 1, Cotoneaster frigida; 2, Nothofagus obliqua.

Communications Received.—W. L.—H. J. S.—H. G. L.—I. W. S.—D. S. F.—W. G.—L. de C.—W. A.—W. P.—I. L.—E. E.—R. E. A.—A. J. H.—G. F. M.

MARKETS.

COVENT GARDEN, Tuesday, January 10th, 1928.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Tuesday by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market and the demand, and they may fluctuate, not only from day to day, but occasionally several times in the day.—Eds.

Plants in Pots, etc.: Average Wholesale Prices.

(All 48's except where otherwise stated).

	s. d. s. d.
Adiantum cuneatum per doz. ...	12 0-15 0
—elegans ...	12 0-15 0
Aralia Sieboldii	9 0-10 0
Araucarias, per doz.... ...	30 0-40 0
Asparagus plumosus ...	12 0-18 0
—Sprengeri ...	12 0-18 0
Aspidistra, green	16 0-60 0
Asplenium, doz.	12 0-18 0
—32's	24 0-30 0
—nidus ...	12 0-15 0
Cacti, per tray 12's, 15's ...	5 0—7 0
Crotons, doz. ...	30 0-45 0
Crytomiums ...	10 0-25 0
Cyclamens, 48's, per doz. ...	27 0-36 0
Daffodils, 48's, per doz. ...	15 0-18 0
Erica gracilis, 48's, per doz.	24 0-30 0
— — 60's, doz.	12 0-15 0

	s. d. s. d.
Erica, mixed, 72's, per doz.	8 0—9 0
—hyemalis, 48's, per doz. ...	18 0-36 0
—nivalis, 48's, per doz. ...	27 0-30 0
— — 60's, doz.	12 0-15 0
Hyacinths, 3's, per doz. ...	24 0-30 0
—60's, per doz.	12 0-18 0
Marguerites, 48's, per doz. ...	18 0-21 0
Nephrolepis in variety ...	12 0-18 0
—32's	24 0-36 0
Palms, Kentia	30 0-48 0
—60's	15 0-18 0
Pteris in variety	10 0-15 0
—large, 60's ...	5 0—6 0
—small ...	4 0—5 0
—72's, per tray of 15's ...	2 6—3 0
Solanums, 48's, per doz. ...	15 0-18 0
—60's per doz.	8 0-10 0

Cut Flowers, etc.: Average Wholesale Prices.

	s. d. s. d.
Adiantum decorum. doz. bun.	18 0-21 0
—cuneatum, per doz. bun. ...	12 0-15 0
Anemones, St. Brigid, per doz. bun. ...	8 0—9 0
Arums (Richardia), per doz. blooms ...	10 0-12 0
Asparagus plumosus per bun. long trails ...	2 6—3 6
—med. sprays	2 0—2 6
short „ ...	— 1 0
—Sprengeri, bun. long sprays	2 6—3 0
med. „ ...	1 0—1 6
short, „ ...	0 6—1 9
Camellias, 12's or 18's, per box	3 0—3 6
Carnations, per doz. blooms	4 0—5 0
Chrysanthemums, per doz. blooms—	
—white ...	4 0—8 0
—yellow ...	5 0—8 0
—pink... ...	5 0—8 0
—bronze ...	5 0—8 0
—red	4 0—5 0
—spray, pink, per doz. bun.	30 0-36 0
—spray, yellow. per doz. bun.	30 0-36 0
—spray, white, per doz. bun.	24 0-30 0
Croton leaves, per doz. ...	1 9—2 6
Daffodils, Golden Spur, per doz. bun.	27 0-30 0
Fern, French, per doz. bun.	10 0-12 0
Forget-me-not, per doz. bun.	15 0-18 0
Freesia, white, Special, per doz. bun. ...	12 0-18 0
—	3 6—4 0
French flowers—	
—Acacia (Mimosa), per doz. bun.	12 0-15 0
—Narcissus,	
—Paper White,	
—per doz. bun.	3 6—4 0
—Ruscus, green, per pad ...	6 0—7 0
—Anemones, mixed, doz. bun. ...	12 0-15 0

	s. d. s. d.
French flowers—	
—Ranunculus, carmine, per doz. bun.	5 0—6 0
— — Barbaroux, per doz. bun.	5 0—6 0
—Violets, single, per doz. bun.	4 0—6 0
Gardenias, per doz. blooms	15 0-18 0
Heather, white, per doz. bun.	— 12 0
Hyacinths, Roman, per doz. bun.	18 0-24 0
—large white, per doz. spikes	4 0—5 0
Lilac, white, per doz. sprays...	6 0—8 0
—mauve, per doz. spikes ...	6 0—8 0
Lilium speciosum album, per bun.	6 0—7 0
—short, per doz.	5 0—6 0
—rubrum, long, per bun. ...	5 0—6 0
—short, per doz.	3 6—4 0
—longiflorum, long, per bun.	7 0—7 6
—short, per doz. blooms ...	— 7 0
Lily-of-the-Valley, per doz. bun.	30 0-36 0
Marigolds, per doz. bun. ...	3 0—4 0
Myrtle, green, per doz. bun.	1 6—2 0
Narcissus Soleil d'Or, per doz. bun.	10 0-15 0
—Paper White, per doz. bun.	10 0-12 0
Orchids, per doz.	
—Cattleyas ...	21 0-30 0
—Cypripediums	8 0-10 0
Roses, per doz. blooms—	
—Columbia ...	10 0-15 0
—Richmond ...	9 0-15 0
—Madame Butterfly ...	12 0-15 0
Smilax, per doz. trails ...	3 0—4 0
Tulips, per doz. bun.—	
—single, white	21 0-30 0
— — yellow ...	24 0-30 0
— — red ...	18 0-30 0
— — pink ...	30 0-42 0
— — terra cotta	24 0-30 0
— — mauve ...	36 0-48 0
Violets, per doz. bun.... ...	4 0—6 0

Remarks.—Chrysanthemums now begin to show that the end of the season is fast approaching. Amongst the disbudded blooms white varieties are sufficient to meet present requirements; bronze, yellow and pink sorts are very limited in quantity and are realising the best prices. Bunch spray white remains at a very low price for January, Winter Cheer being the best amongst the coloured varieties. Golden Spur Daffodils from home-growers, and yellow and white Narcissi from the Channel Islands are still increasing in quantity, and prices are on the down grade. Tulips also show a considerable increase of supplies and are much finer in quality, especially William Copland, Thos. Moore, Prince of Austria, La Reine, Yellow Prince and Matalas (pink). A few Couronne d'Or have been on sale during the week. Carnations are again more plentiful and prices are easier. Amongst Roses, the varieties Madame Butterfly and Richmond from home-growers are the best. Lilium longiflorum and Arums (Richardias) show no change. L. speciosum rubrum is very limited in quantity. Single Violets and Orchid blooms are very scarce. White and mauve Lilac is arriving in fine condition, also a limited quantity of Prunus triloba. Large consignments of Tulips are now arriving from Holland in good condition.

In the French flower department there is little change from last week. Narcissi, Acacia (Mimosa) and single Violets are arriving in good condition. Carnations, Roses and Ranunculi have suffered from unfavourable weather conditions, but should arrive in better condition shortly and become more plentiful.

Vegetables: Average Wholesale Prices.

	s. d. s. d.
Asparagus, Devon ...	8 0-10 0
—Paris Green	8 0-10 0
—Sprue ...	1 6—2 0
—"National"	— 20 0
Beans, Madeira, per box ...	3 0—8 0
—Guernsey, finest, per lb.	4 0—8 0
—ordinary ...	2 0—3 0
Beets	6 0—8 0
Brussels Sprouts, ½-bag ...	3 0—4 0
Carrots ...	7 0—8 0
Cauliflower, per crate ...	10 0-12 0
Celery (washed), per doz. fans	18 0-30 0
Cucumbers, doz.	18 0-24 0
French Endive, per doz. ...	2 0—3 0
Batavian, per doz.... ...	2 0—3 0
Leeks, per doz.	3 0—3 6
Lettuce, French, round, per doz.	2 0—3 0

	s. d. s. d.
Mint, forced, per doz. bun.	4 0—7 0
Mushrooms—	
—Cups ...	2 0—3 0
—Broilers ...	1 6—1 9
Onions—	
—Dutch ...	7 6—8 6
—Spanish ...	13 0-15 6
Parsnips, cwt.	4 0—5 0
Peas, Guernsey, per lb. ...	2 0—6 0
Potatos—	
—English, cwt.	5 0—8 0
—Guernsey, new, per lb. ...	0 8—1 3
—Azores, case	10 0-18 0
Tomatos, English, per lb. ...	— 1 6
Tomatos, Canary Islands ...	12 0-16 0
Turnips, per cwt. ...	3 6—4 0

Fruit: Average Wholesale Prices.

	s. d. s. d.
Apples, English—	
—Newton Wonder	4 —8 0
—Lane's Prince Albert ...	4 0—8 0
—Bramley's Seedling ...	6 0-12 0
—Other cookers	3 0—6 0
—Cox's Orange Pippin, per case	20 0-35 0
½-sieve ...	6 0-15 0
Apples, American—	
—Newtowns ...	12 0-14 0
—Jonathan ...	12 0-14 0
—Delicious ...	14 0-15 0
—Winter ...	12 0-14 0
—Banana ...	— —
—Oregon, Newtown Pippin	17 0-18 0
Apples, Nova Scotian—	
—Greenings ...	18 0-24 0
—Ribston Pippin, per barrel ...	18 0-24 0
—Wellington ...	24 0-30 0
—Russet ...	28 0-34 0
—Wagener, per barrel ...	22 0-24 0
Apricots, South African, per box	6 0-10 0

	s. d. s. d.
Bananas ...	16 0-24 0
Grape Fruit—	
—Blue Goose...	— 30 0
—Dominica ...	20 0-25 0
—Jamaica ...	— 22 6
—Florida ...	— 25 0
Grapes, English—	
—Alicante ...	1 6—2 6
—Colmar ...	1 6—3 0
—Muscat ...	5 0-10 0
—Canon Hall...	6 0—8 0
Lemons, Messina. per case ...	25 0-30 0
—boxes ...	10 0-12 0
Oranges, per case—	
—Valencias (Spanish)	18 0-35 0
—Jamaica ...	— 18 0
—Jaffa ...	13 0-14 0
—Tangerines ...	1 0—2 2
Peaches, South African, tray	5 0-12 0
Pears—	
—Doyenné du Comice, per doz.... ...	3 0—6 0
—Oregon Doyenné du Comice, ½ case	14 0-16 0
—Nelis ...	20 0-24 0
Pines, per case	25 0-36 0

Remarks.—Business in the market is slightly better than might be expected for the time of year. Hothouse Grapes sell fairly well considering the comparatively heavy supplies from Belgium. In the Apple section business is on the slow side, arrivals of imported Apples being ample for the demand, while the few home-grown varieties available sell well if of good quality. Fruits from South Africa, consisting of Peaches and Apricots, are in good condition and proving popular with the trade. Oranges meet a very weak demand with little or no indication of improvement, except for large varieties. The Pear trade is quiet, supplies, mainly from California, moving very slowly.

Guernsey Beans and Peas are enquired for, the best of both selling at high prices. The shipment of Beans from Madeira this week was heavy, but the produce was in fairly good condition and sold moderately well. Hothouse new Potatos are scarce, but the supplies from France and the Azores are ample for the demand at the present prices. Salads maintain a fair demand. Green vegetables are much more plentiful than of late, and quotations are lower. Cauliflowers are scarce and dear. The Mushroom department reports moderate supplies and a fairly steady inquiry. The old Potato trade shows little or no variation in selling prices.

GLASGOW.

Business was very quiet in all sections of the market during the first week of the year, when Monday and part of Tuesday were observed as a holiday. In the cut flower department dealings in Chrysanthemums were restricted to Winter Cheer, 1s to 1s. 6d. for 6's; Wilcox and Baldock's Crimson, 1s. to 1s. 3d.; Heston White, 10d, to 1s.; and Sunshine, 8d. to 10d. Tulips were very cheap, especially Thomas Moore, which was disposed of on Thursday at 6d. per bunch, other prices for the week being: Thos. Moore, Brilliant and Yellow, 9d. to 1s.; W. Copland, 1s. 6d. to 2s.; Rosine and Couronne d'Or, 1s. 6d. to 1s. 9d.; Hyacinths were worth 9d. to 1s. 3d. for 3's, and Golden Spur Daffodils, 2s. to 2s. 6d. per bunch. Carnations made 4s. to 6s. per dozen; Roses, 10s. to 12s.; special Narcissi, 3s. to 4s. per dozen bunches; ordinary, 6d. to 1s. 6d. Lilium longiflorum, 4s. to 5s. per bunch; Lily-of-the-Valley, 1s. 6d. to 1s. 9d.; and Asparagus, 9d. to 1s. 6d.

In the fruit market prices generally reflected an upward tendency. This was particularly the case with regard to Apples. Albermarle Pippins ranged from 50s. to 62s. per barrel; York Imperial, 28s. to 37s.; Canadian Greenings No. 1, 39s. to 42s.; No. 2, 29s. to 32s.; domestic, 32s. to 36s.; Starks No. 1, 28s. to 30s.; No. 2, 23s. to 25s.; No. 3, 15s. to 16s.; Ben Davis No. 1, 25s.; No. 2, 20s.; No. 3, 15s.; Winesap, 11s. 6d. to 15s. per case; Rome Beauty, 9s. 6d. to 12s. 6d.; Ortley, 16s. to 18s.; Newtown, 16s. to 20s. Oranges were firm; Jaffas, 144's, 17s. 6d.; Valencia, 300's, 14s. to 17s.; 360's and 504's, 9s. to 12s.; 240's, 18s. to 20s.; and 420's, 19s. to 28s.; Malaga Bitter, 18s. half-case; Mandarin, 1s. 4d. to 1s. 8d. per tray; Grape Fruit, 16s. to 18s. per case; Californian Winter Nelis Pears, 26s. to 28s.; Washington Apples, 18s. to 22s.; and home Grapes, 3s. 6d. to 4s. per lb. South African fruit was more plentiful, and Peaches sold at 5s. to 12s. per box. Beauty Pears, 6s. to 10s.; and Methley, 4s. to 7s. Bananas varied from 18s. to 23s.

Vegetables were represented by Lettuce at 6s. to 7s. per crate; Mushrooms, 2s. per lb.; Teneriffe Tomatos, 12s. to 20s. per bundle; and Valencia Onions, 13s. 6d. to 15s. per case.

THE WEATHER IN DECEMBER.

December, 1927, was the most easterly-windy month experienced in Southport since the Fernley Observatory was established fifty-six years ago. It was also extremely calm, dull and dry; the district escaped the snowstorms that formed so serious a feature of the month's weather over very much of Britain. From about the 12th to the end (with the exception of a few days around the solstice) very cold conditions prevailed; but there were no excessively low readings of the thermometer, because, owing to the overcast skies, the day-to-night range of temperature was remarkably small. The mean temperature was 35·7°, or 4·3° below the fifty-five years' average. It was the coldest December since 1892, previous to which, however, several much colder ones occurred. Only nine days yielded measurable rainfall, or ten fewer than usual. The total precipitation was 1·22 inch, which is 2·05 inches below the average. Scarcely 23 hours of bright sunshine were recorded, or 14 fewer hours than the normal. Winds from north-east, east and south-east occupied so many as 693 hours out of the 744 that constituted the month. Westerly (or sea) winds were absent. Frost was registered on fourteen occasions, both in the shade and on the grass; the absolute minima were 20° and 12° respectively. Snow and fog were restricted to four dates, and were most moderate. *Joseph Baxendell, The Fernley Observatory, Southport.*

CATALOGUES RECEIVED.

Seeds.

D. G Purdie, 6, Waterloo Street, Glasgow.
S. Finney and Co., Ltd., 18, Grainger Street, Newcastle-on-Tyne.
Harrison and Sons, St. James' Street, Leicester.
J. Waterer, Sons and Crisp, Ltd., Twyford, Berks.
W. Smith and Son, Ltd., 18, Market Street, Aberdeen.
W. Cutbush and Son, Ltd., Barnet, Herts.
E. P. Dixon and Sons, Ltd., Hull.
Barr and Sons, 11, King Street, Covent Garden, W.C.2.
Samsons, Ltd., 8, Portland Street, Kilmarnock.
W. Fell and Co., Ltd., Hexham.
Clement Dalley and Co., Ltd., Kidderminster.
Austin and McAslan, Glasgow.
C. S. Daniels and Son, Wymondham, Norfolk.
Herd Bros., Penrith.
W. Drummond and Sons, Ltd., 57, Dawson Street, Dublin.
W. H. Simpson and Sons, Birmingham.
R. Veitch and Son, 54, High Street, Exeter.
Dickson, Brown and Tait, Manchester.

Plants, etc.

Blackmore and Langdon, Bath.—Begonias, Delphiniums, Gloxinias.

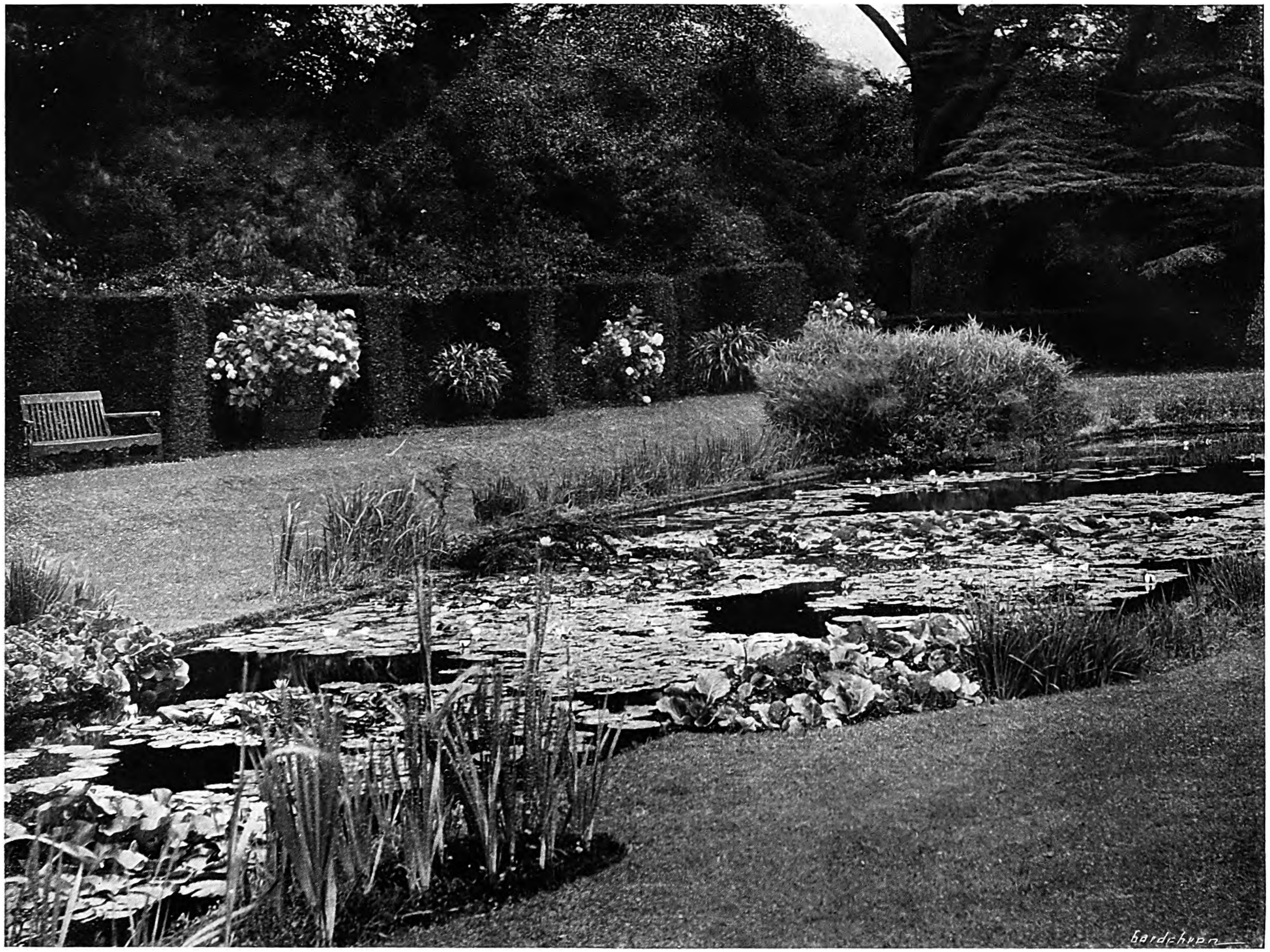
Foreign.

Albert Treppens and Co., Lindenstrasse 13, Berlin.—Seeds.
F. Roemer, Quedlinburg, Germany.—Seeds.

GARDENING APPOINTMENT.

Mr. A. G. Reeves, for the past twelve years Gardener at Sunnyfield, Hampstead, as Gardener and Estate Manager to Queenswood Schools, Ltd., Hatfield, Herts. (Thanks for 2/- for R.G.O.F. Box.—Eds.)

Supplement to the GARDENERS' CHRONICLE.



WATER GARDEN AT SUTTON PLACE, GUILDFORD.

THE
Gardeners' Chronicle
No. 2143.—SATURDAY, JANUARY 21, 1928.

CONTENTS.

Alpine garden—
  Ourisia caespitosa... 42
  Ranunculus parnassifolius 42
America's National flower 39
Birds and fruit ... 51
British Florists' Federation 38
British Mycological Society 39
Cairns, Mr. J.... ... 39
Chili and the Andes... 46
Curtis, Mr. C. H., Belgian Honour for ... 37
Douglas, David, Memorial to 37
Flower garden—
  Gazania rigens ... 42
  Œnothera Drummondii 42
"Gardeners' Chronicle" seventy-five years ago 39
Gardeners' Royal Benevolent Institution ... 39
German Rose Show ... 38
Imperial Fruit Show... 38
Indoor plants—
  Chirita lavandulacea 43
  Rhabdothamnus Solandri 43
  Rhodochiton volubile 43
Irish horticultural revival 45
Kew Gardeners' Soirée 38
Kew, indoor plants at 38
Kew notes 45
Mesembryanthemum 49
Mole in the United States, the 38
Morning Glory, the ... 37
Obituary—
  Nicholson, Wm. ... 53
  Tamms, F 53
Parks and gardens, public 50
Pittosporum undulatum 51
Plane trees for Paris... 38
Plants new or noteworthy—
  Two new hybrid Cotoneasters ... 44
Plants, South American 46
Potato crop of 1927, the English and Welsh 37
Rainfall at Horsley Hall in 1927 ... 38
Ramondia (Jankaea) Heldreichii 42
Reader Mr. F., presentation to 37
Roses, mulching ... 51
Royal Caledonian Horticultural Society 38
Rumania, the weather in 38
Rushes for chairs, shortage of... ... 51
Societies—
  Guildford and District Rose ... 53
  Professional Gardeners' 53
  Reading Gardeners' 53
  Royal Horticultural 51
  Salisbury Gardeners' 53
  United Horticultural Benefit & Provident 53
Trees and shrubs—
  Azara integrifolia ... 44
  Chimonanthus fragrans 44
  Sarcococcas ... 44
Vegetable garden—
  Forcing Asparagus 50
  Leeks 50
  The uses of Chicory 50
Viola Howellii ... 51
Violas, a revision of ... 48
Week's work, the ... 40
Yorkshire Flower Show and Gala 38

ILLUSTRATIONS.

Cotoneaster, a new hybrid 44
Cotoneaster Watereri in frui 45
Gazania rigens 47
Glottiphyllum Neilii, 49; G. surrectum 49
Jeffrey, Mr J. T., portrait of 38
Monastery of Haghios Dionysios 48
Œnothera Drummondii... 41
Ramondia (Jankaea) Heldreichii 42
Rhabdothamnus Solandri 39

SUPPLEMENT PLATE.

The Water Garden, Sutton Place, Guildford.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 39·1.

ACTUAL TEMPERATURE—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London, Wednesday, January 18, 10 a.m. Bar. 31·3 Temp. 40°. Weather, Foggy.

The Morning Glory.

THE Morning Glory — the proper designation of which is now Pharbitis Nil, although gardeners will continue to know it under the old name, Ipomaea hederacea—is a capricious plant. When it was introduced into Japan from China, some thousand years ago, it came, as befits its native country, in simple form. The flowers were all single. Since its sojourn in Japan—and no doubt also during its home keeping in China—it has assumed all manner of physiological duplicity. It doubles on the least provocation or on none, and the form of its doubling is as diverse as the doubleness is frequent. The doubling of the Morning Glory is of one or other of three kinds. The flowers may suffer from the malady known as petalody—a sort of loss of inherited memory—in which those things which ought to be stamens masquerade as petals. The petaloid disguise may be complete, so that it may be penetrated only by witnessing it in the dressing-up stage—or, in other words, following the course of development of the flower and its parts. Or the petalody may be confined to the stalk of the stamen, the anther persisting—flaunted on a petal-like support; this kind of petalody is known by the Japanese as the Kujaku, that is, the Peacock type. Or the Morning Glory may double its flowers by a process of feathering. In this state the petals divide each into a number of narrow lobes. The whole plant seems to get a little crazy. As some folks jazz from night to morning, so the Morning Glory in high feather has rolled up leaves and even rolled cotyledons. Fortunately, perhaps, when things reach this stage the art of paternity is lost, and the most feathersome have no offspring. These monstrous things keep on turning up—rolling up, perhaps, would be the better expression—and some there are that like them. Thus, if it fails to develop petalomania and escapes the temptation to feather, the Morning Glory may produce a "Botan" flower. This form of freakishness is due to proliferation. Plants which do this belong to the category of beings which do not know when to stop; a painful class. Having produced a corolla, the vigour of growth and development is not assuaged, and in each section of the corolla a bud is formed which grows and forms a calyx. Energy spent thus unthriftily results not unnaturally in barrenness and so Botans do not breed. Like the other monstrous variations of the pure and simple Morning Glory, these proliferating "Botans" are always appearing and disappearing. There are also to be found combinations of these monsters. Such an one is Shishi—the feathered-flowered freak—which sometimes joins with Botan, the proliferator, to produce a masterpiece of duplicity, compelling admiration, not only by reason of its strange attractiveness, but also by the ordered contortion of its floral members. Messrs. K. Miyake and Y. Imai, who have given us such an admirable account* of the double crossing of Nature by this plant, have augmented our indebtedness to them by investigating the genetical history of these diverse forms of doubling. It is satisfactory to learn that they are all due to the lack of something; lack of balance certainly. Some factor present in the normal plant drops out and with the loss of its controlling influence the developing flower departs from the narrow way of rectitude. The due proportion between the several members are lost. Developmental anarchy reigns; as a result the first come, that is, the petals, are first served. They help themselves liberally to the scanty store of material which serves for development. In consequence, they suffer from overgrowth and the succeeding organs—the stamens and pistil—go begging, and never acquire fertility. These pathological things are manifestly of great moment to science. They are easy of diagnosis and investigation in the plant, but are obscure and not often susceptible of investigation in other forms of life. Yet who can doubt but that such things happen in all forms of life, even the highest. To seek out what disturbs the even tenor of life's way is a task well worth the doing, and our Japanese colleagues have made a notable contribution to the science of pathology in anatomising the vagaries of the Morning Glory.

Our Supplement Plate.—The beautiful Water Garden illustrated in the Supplement Plate presented with this issue, represents a scene in the gardens at Sutton Place, Guildford, Surrey, formerly the residence of Lord and Lady Northcliffe, and recently in the occupation of the Duke of Sutherland, and under the charge of Mr. J. A. Kirkwood.

Presentation to Mr. Frank Reader.—The long services Mr. Frank Reader has rendered to the Royal Horticultural Society were gracefully acknowledged on Tuesday last, when—in the unavoidable absence of Lord Lambourne—Sir William Lawrence presented Mr. Reader with a cheque for £650, from the Council. A further presentation of a more personal character was also made by Sir William Lawrence; this consisted of a knee-hole writing table and a chair, *en suite*, together with a handsome silver inkstand. These were subscribed for by thirty-four past and present members of the Council, all of whom, by letter or in person, expressed their high appreciation of Mr. Reader's work and his unfailing courtesy and cheerfulness.

Belgian Honour for Mr. C. H. Curtis.—His Majesty the King of the Belgians has been graciously pleased to confer upon Mr. Charles H. Curtis, Managing Editor of *The Gardeners' Chronicle*, the decoration of Chevalier de l'Ordre de la Couronne. The warrant and insignia of the Order—conferred in recognition of services rendered to the horticultural industry of Belgium—were presented to Mr. Curtis by His Excellency, Baron de Cartier-de-Marchienne, at the Belgian Embassy on Wednesday, January 18.

Memorial to David Douglas.—In memory of the famous traveller and plant collector, David Douglas, the State of Oregon has given his name to a mountain peak within sight of the Eugene-Klamath Falls. To make this curious and belated honour definite in its application the authorities have named the peak Mt. David Douglas. In May, 1827, while on his way home to England after a botanising expedition in Oregon, Douglas saw two high points of the Rockies and named them Mt. Brown and Mt. Hooker respectively, in honour of the two famous botanists, R. Brown and Sir W. J. Hooker. These two names still stand for mountains about 15,000 feet high. Although many trees and lowlier plants are named after Douglas, more than a century has passed ere his name has appeared on the map of Oregon. It is stated that Douglas found and described upwards of a thousand plants on the Atlantic sea-board, these including two hundred species not previously known to botanists. The story has been told often of the tragic death of this intrepid traveller, in Hawaii, in 1834.

Forestry in England.—The *Quarterly Journal of Forestry* (No. 1, Vol. XXII), issued by the Royal English Arboricultural Society, describes the recent activities of English foresters throughout the country. It also contains a number of original articles by several eminent authorities, which should appeal to many, including the one dealing with the establishment and maintenance of trees in roads and streets, by Mr. W. Dallimore. Other interesting subjects dealt with are the use of broad-leaved trees for the manufacture of paper; the building of a cheap forest bridge and one by the Rt. Hon. the Lord Clinton on "Forestry and Landscape."

"The Gardeners' Chronicle" Staff.—Mr. A. Gordon Forsyth has joined the Editorial Staff of *The Gardeners' Chronicle*. Upon leaving Wisley Gardens, where he was head of the Propagating Department for nearly seven years, Mr. Forsyth was presented with a handsome gold wristlet watch by his colleagues as a token of their esteem. Mr. F. J. Chittenden, the Director, in making the presentation. expressed the sincere hope that good fortune would accompany Mr. Forsyth in his new position, a wish that was heartily endorsed by all his friends.

English and Welsh Potato Crop of 1927.—Notwithstanding gloomy forecasts, the Potato crop in England and Wales was larger in 1927 than in 1926. Returns published recently estimate the crop at 5·9 tons per acre, or three tons per acre below the average, but nearly ten hundredweights per acre above the crop of 1926. The total production of Potatos in

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**Journal of Genetics*, Vol. 19, No. 1, November, 1927. Cambridge University Press. Fetter Lane, E.C.4. Price 15/- net.

England and Wales during the past year is estimated at 3,055,000 tons, as compared with 2,763,000 tons in 1926, and 3,214,000 tons in 1925. There appears to have been a falling off in the average yields in Lancashire, Cheshire, Lincolnshire (Holland Division) and the Isle of Ely, but results above the average are reported from Essex and the Lindsey division of the county of Lincolnshire

Imperial Fruit Show.—As the promoters have failed to secure the Kelvin Hall on suitable dates, the proposal to hold the Imperial Fruit Show in Glasgow this year has been abandoned. It may, of course, be considered for 1929 or 1930, but that rests with the Committee in London. Local interests were directed towards an exhibition of Potatos and Chrysanthemums which was to form part of the exhibition.

Twenty-fifth Year of "De Veldbode."—Our Dutch contemporary, *De Veldbode* ("The Field-Messenger") celebrated its twenty-fifth year of publication by an excellently produced Christmas Number of over a hundred and thirty pages, with a stiff, buff cover bearing a reproduction of a crayon drawing depicting a shepherdess and her sheep. There are many articles of interest to agriculturists and horticulturists, including one on Rose-growing in Holland, another on electricity in the service of agriculture, and an account of the progress of and reclamation in the low-lying parts of the Netherlands. The illustrations are numerous and of high quality, and the issue reflects most creditably upon its editors. It seems a pity, however, that the pages are not numbered.

Kew Gardeners' Annual Social and Dance.—Kewites past and present will hold their annual gathering at the Kew Palais de Dance (at the foot of Kew Bridge), on Friday, January 27. Dancing will commence at 7.30 p.m.; a Whist Drive will also be arranged. Tickets, price 3/6 each, may be obtained at the door. Over two-hundred-and-fifty persons attended the annual gathering last year. The Committee trusts that all old Kewites who may be in the neighbourhood of London will make a special effort to attend.

Rainfall at Horsley Hall in 1927.—At Horsley Hall, Gresford, North Wales, the three driest months during 1927 were February, May and December, when 1·45 inch, 1·19 inch and 1·67 inch respectively, were recorded. The two wettest months were June and August, when 4·30 inches and 4·68 inches were recorded. The rainfall for the year amounted to 31·07 inches, as compared with 28·59 inches in 1926.

German Rose Show.—Rose-lovers in the town of München-Gladbach, in Germany, propose to hold a great Rose Exhibition during the period from July 1 to October 1, 1928. A portion of land adjoining the Kaiser Park, near the Rose Garden of the local amateur Rose-growers' Society, has been set aside for the out-door part of the Exhibition, and the municipal Parks Superintendent, Herr Hartrath, is to superintend the planting and tending of the Roses. The site chosen is in an open, sunny situation, with suitable soil. Besides the open-air exhibition, there will be accommodation under cover for cut Roses. The German Rose-lovers' Society has arranged to make their annual excursion on June 30 to München-Gladbach, so as to have the privilege of seeing the Exhibition.

Plane Trees for Paris.—It is reported that the Municipal Council of Paris has decided to use Plane tree to replace the Chestnuts which have died through adverse conditions in the capital. The streets to be planted first are the Boulevard St. Germain, the Avenue des Champs Elysees, the Boulevard de Magenta, the Avenue du President Wilson, the Boulevard de Sebastopol, the Boulevard de Port-Royal and the Avenue de Ségur. It is estimated that the work will cost two million francs, approximately £16,000.

The Mole in the United States.—It seems from an account in *Science Service* that they have their mole troubles in the United States of America no less than in this country. Moles have been particularly annoying on the golf greens, and the golf authorities have tried three methods, trapping, poisoning, and the use of repellents, in their endeavours to mitigate the damage caused to the greens and fairways. As might have been expected, the results from poison were negligible. Strychnine, arsenic and barium carbonate were placed on a vegetable bait, but the moles, being carnivorous, were not to be tempted. Trapping was more effective, but objection was raised by the golfers because the traps interfered with their play. In the New York State they found the best repellent to be paradichlorobenzine. A teaspoonful placed in the mole-runs at six feet to eight feet intervals seemed to banish the moles effectively.

Royal Caledonian Horticultural Society.—The Annual Meeting of this Society was held in Dowell's Rooms, on Wednesday, January 11, when Mr. W. J. Thomson presided over a large attendance of members. The Council's Report showed that the Society was in a flourishing condition, and that there was a satisfactory increase in the membership and funds. The Council also reported that as a result of their negotiations with the Board of Agriculture for Scotland on the question of the suppression of plant pests, the Board had agreed to appoint a Horticultural Advisory Committee to meet and advise them upon horticultural matters. Mr. R. L. Scarlett, the Society's representative on that Committee reported as to the work done, and advised members to communicate with the Society when pests appeared in their gardens. The following office-bearers were elected :—Hon. President, The Rt. Hon. the Earl of Stair ; President, Mr. J. T. Jeffrey ; Vice-Presidents, Mr. R. L. Scarlett and Mr. E. P. Laird ; Councillors, Messrs. Brunton, Sword, W. H. Thomson, Arch. Forbes, and T. J. Gray. Allocations were voted from the Society's Benevolent Fund to three widows of deceased gardeners, and to the Royal Gardeners' Orphan Fund. The newly-elected President, whose portrait appears on this page, is the Superintendent of the Edinburgh Corporation's Parks and Open Spaces. An appreciation of Mr. J. T. Jeffrey appeared in *The Gardeners' Chronicle* of July 16, 1923.

MR. J. T. JEFFREY.

Indoor Plants at Kew.—In the Flowering House at Kew are to be seen several examples of the various types of tender plants that are suitable for furnishing a greenhouse at this season of the year. Upon entering the house, one is confronted by a group of Buddleia asiatica, a non-hardy species with slender growths covered with silvery down and terminated by narrow, close-packed spikes of creamy-white flowers. Near these are many interesting subjects from South Africa ; Crassula lactea, with fleshy, dark-green leaves and large heads of small, white, star-like blooms ; Lachenalia pendula, and some well-grown plants of Veltheimia viridifolia, a bulbous subject similar in appearance to Lachenalia, with beautiful broad, glossy leaves, the margins of these being waved and wrinkled, and tall, stout stems bearing heads of drooping, dull rose-pink tubular flowers. A fine batch of Narcissus Soleil d'Or, with the blue-flowered Coleus thyrsoideus adjoining, is a distinctive feature of the house, although the various improved forms of Begonia Gloire de Lorraine undoubtedly provide the finest effect. Hippeastrum aulicum is a notable subject of imposing dimensions, with stout stems some three feet in height, terminated by heads of three or four enormous, deep, velvety-crimson blooms. Of the various climbing plants now flowering, possibly the most noticeable is a fine Cestrum elegans, that is laden with pendent clusters of rich red flowers. Another climber is Canarina campanulata, whose slender growths bear large, bell-shaped, dull orange-coloured blossoms, while those of Pentapterygium serpens, a semi-climbing shrub from Australia, are rich scarlet. Sparmannia africana, a bushy plant about six feet in height, with numerous flowers consisting of white, spreading petals and prominent central clusters of red and yellow stamens, occupies an outstanding position, as also does the tall-growing and rich, blue-flowered Pycnostachys Dawei. Other plants of note in this house are Jacobinia chrysostephana, with large, terminal clusters of orange-yellow flowers, borne above large, deep-green, leathery foliage ; Peristrophe speciosa, from the Himalaya, a plant of bushy habit, producing vivid rose-purple blooms ; and a large, well-flowered specimen of Camellia japonica magnoliaefolia.

British Florists' Federation.—The eleventh Annual General Meeting of the British Florists' Federation will be held at the Restaurant Frascati, Oxford Street, London, W.1, on Friday, January 27, at 3.30 p.m. The ninth Annual Dinner will be held at The Restaurant Frascati, at 6.15 p.m., on the same day ; Mr. J. Artindale will preside.

The Weather in Rumania.—As in other parts of Europe, so in Rumania the abnormal weather of the past autumn and winter has done much damage to horticultural crops and caused serious losses to growers and merchants. Rain fell in the middle of December, a phenomenon previously unknown ; and equally unprecedented was the long, dry, warm autumn which was the forerunner of the unusual winter. Autumn planting is generally practised as being preferable to spring, but it was not possible to plant in such a dry soil, especially as the warm period was immediately followed by intense cold. Spring planting can not usually be accomplished until the middle of March, by reason of the long period of winter frosts, and scarcely three weeks after this, warm weather suddenly begins, and with it, the bursting of the buds. The Chrysanthemum growers fared especially badly during the past season ; the first frosts usually occur about the middle of October, and the shelters are prepared accordingly. In consequence of the great heat in September, the flowers developed abnormally early, and open-air Chrysanthemums were available in great numbers in the first days of October. No frost having occurred to effect the prices, the cultivators of Chrysanthemums under glass found their products left on their hands because the open-air flowers were so cheap. Indeed, for this latter class of flowers the supply exceeded the demand, and the prices—in some instances, about one-third-of-a-penny per bloom—were ruinous for small and large growers alike.

Yorkshire Flower Show and Gala.—At the Annual Meeting of the Yorkshire Flower Show and Gala Association, Sir Edward Allen Brotherton, Bart., was unanimously invited to be President again for 1928, and kindly consented to accept office. It was decided to hold the Flower Show and Gala this year on the historic Knavesmire, at York, as previously, the dates fixed being Tuesday, Wednesday and Thursday, June 19, 20 and 21. Great interest has been aroused locally by the fact that the opening day will be Tuesday instead of the usual Wednesday. It is felt that the alteration will considerably increase the attendance on the second day as a larger number of people will come on the local half-holiday, when the admission charges are lower. The position of Secretary of the Association, rendered vacant by the death of Captain Arthur Anderson, has been filled by Mr. Percy Mennim, whose address is The Assembly Rooms, York.

American Horticultural Societies.—The Pennsylvania Horticultural Society recently celebrated its centenary. This is the oldest horticultural society in America. The Massachusetts Horticultural Society will be one hundred years old in 1929; incidentally, the directors are carefully considering a location for a new hall to replace the one now in use, built twenty-five years ago. Worcester, Mass., is building a new horticultural hall, which will be opened in March, at a cost of over $300,000.

America's National Flower.—The adoption of the Columbine as the National Flower of the United States was the subject of a resolution recently presented in the House of Representatives. Mr. Sears of Florida, in introducing the subject, stated that "various nations of the world have long had national flowers which have been made famous in song and story, and many of the States have adopted State flowers," adding that the Columbine is to be found in all the States in the Union.

Mr. J. Cairns.—This well-known gardener has resigned his position at Wortley Hall, near Sheffield, where he has had charge of the gardens for the past twenty-five years, and it is regrettable that ill-health is the reason for his retirement. Mr. Cairns recently underwent a severe operation, and several months must elapse before he regains his normal strength and vigour. The many friends of this courteous and clever gardener will regret the severance of his connection with Wortley and wish him a speedy return to good health.

British Mycological Society.—On the occasion of the London Meeting of this Society, to be held at University College, Gower Street, W.C.1, on Saturday, January 21, at 11 a.m., Dr. E. J. Butler will discuss "Morphology of Catenaria in the Eggs of the Liver Fluke"; Miss M. M. Duke will read a paper on "The Genera Vermicularia and Colletotrichum"; Mr. N. C. Preston will deal with "A Cercospora Leaf Spot of Turnip," and Mr. J. Ramsbottom will discuss "Mycological Nomenclature." The exhibits will include some Eastern materia medica; British Fungi of interest; Ceratostoma galls on Juniper; a fungus on tropical grasses, etc. Lunch will be arranged in the College Refectory.

Gardeners' Royal Benevolent Institution.—The eighty-eighth Annual General Meeting of the members and subscribers of the Gardeners' Royal Benevolent Institution will be held at "Simpson's," 101, Strand, London, on Thursday, January 26, at 3 o'clock p.m., for the purpose of receiving the Report of the Committee and the Accounts of the Institution (as audited) for the year 1927; electing officers for the year 1928; and for the election of twenty-five annuitants on the funds. The chair will be taken by Leonard Sutton, Esq., J.P., C.B.E., Chairman of Committee, at 3 o'clock. The poll will be open at 3 o'clock and close at 4 o'clock precisely.

Legacy to a Gardener.—The late Lady C. Nall Cain, of Brocket Hall, Hatfield, who died on October 21, 1927, left estate to the gross value of £38,227. Amongst the several bequests is one of £100 to Mr. Thomas Pateman, gardener at Brocket Hall.

Appointments for the Ensuing Week.—Monday, January 23: Birmingham Gardeners' Association meets. Wednesday, January 25: London Gardens Guild lecture; Wimbledon Gardeners' Society's meeting. Thursday, January 26: Gardeners' Royal Benevolent Institution annual meeting and election at Simpson's Restaurant, Strand; Paisley Florists' Society's meeting; Bideford Horticultural Society's meeting. Friday, January 27: Manchester and North of England Orchid Society's meeting; British Florists' Federation Annual Meeting and Dinner at Frascati's, Oxford Street, W. Saturday, January 28: Lancaster Horticultural Association's meeting.

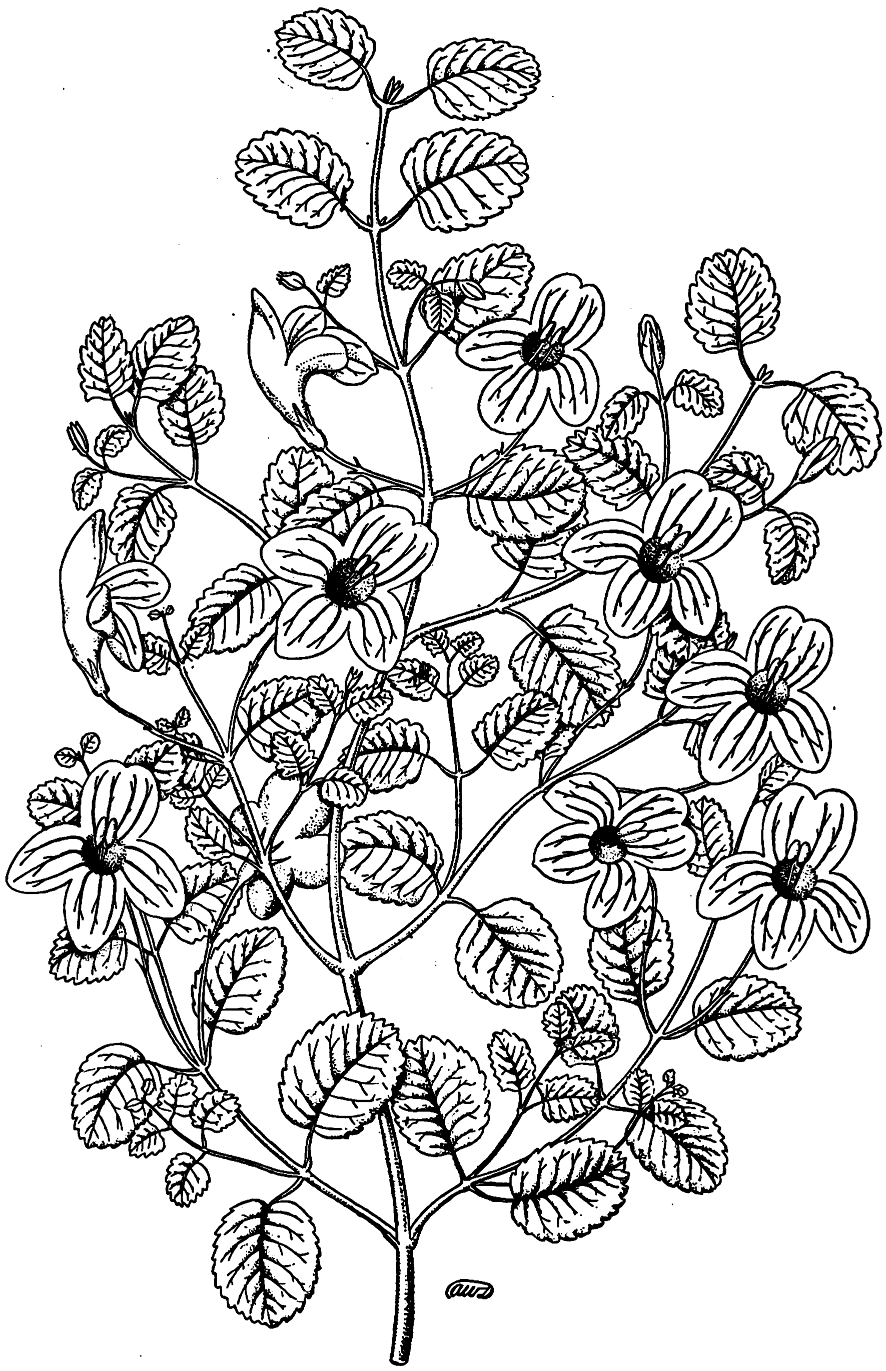

FIG. 27.—RHABDOTHAMNUS SOLANDRI.

(see p. 43).

"Gardeners' Chronicle" Seventy-five Years Ago.—*Zygopetalon Mackayii.*—This is a very useful plant for the decoration of the conservatory or drawing room during the winter months, although I have seldom seen it grown for that purpose. By having five or six plants they may be had in flower from October till March or April, and are very fragrant, and, unlike most of the rarer Orchidaceous plants, may be obtained at a small cost. There are several varieties, or nearly allied species; in some the lip is nearly white, with pink or blue veins. We have an imported variety, the lip of which is of a brilliant blue. I find these plants succeed well if potted in a compost of rough peat, leaf-mould and silver sand and plenty of drainage. Whilst growing they require a liberal supply of water and occasionally a little weak liquid manure. Coming from the temperate part of South America, they do not require much heat; they grow well in a warm frame, vinery, or other similar structure. There are several other Orchidaceous plants flowering in winter and not requiring much heat, which might likewise be cultivated for the same purposes as the Zygopetalon Mackayii. There is a plant here of Barkeria Skinneri with eighteen or nineteen flower spikes, which has been in flower for more than six weeks, suspended in a drawing room. *S. Woolley, Gardener to H. B. Ker, Esq., Cheshunt. Gard. Chron., January 15, 1853.*

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN MOORE, Manchester.

Odontoglossums.—In the cool house many plants will be completing their growth, and several flower spikes developing amongst the Odontoglossums. All spikes should be secured separately to a short, neat stake in good time, so that the lower portion of the stem will grow firm and straight. A keen search should be made for thrips, and steps should be taken to eradicate them, either by fumigating with XL All Compound, on quiet evenings, or spraying with some approved insecticide, choosing a fine, clear day for the latter operation, and carrying it out early in the day to allow the foliage to dry before night. Arrange the plants so that they receive the full benefit of light and air. Watering should be carefully attended to, as well-rooted plants will need an ample supply when developing their growths and flower spikes.

Potting Materials.—Secure a good stock of potting materials—pots, fibre, loam, etc.—in readiness for the busy season. Advantage should be taken of open weather to obtain a good supply of Sphagnum-moss, so as to avoid delays when repotting.

Dendrobium acuminatum.—This attractive species, a native of the Philippine Islands, is obviously a winter grower, and should be suspended near the roof-glass in the warm house, in a light position where there is a free circulation of air; it should be given every encouragement to develop its growths; spray lightly on bright days, and provide a moderate supply of water at the roots, allowing the compost to become dry between each application. Fresh roots will be made as the new bulb develops, when any necessary repotting, or top-dressing, may be done, using well-drained pans and a compost of two parts coarse A.1. fibre, and one part Sphagnum-moss; firm potting is essential. Water sparingly until the new roots are permeating the compost. When growth is complete, only sufficient water is needed to keep the bulbs from shrivelling; when the flower spikes show at the apex of the pseudo-bulbs, the supply of water may be increased.

Deciduous and Semi-Deciduous Dendrobiums.—These plants, after resting in a cool house, are showing flower-buds, and will require a slightly increased amount of water at the roots, the compost being allowed to dry well before giving water again. To prolong the flowering season select some of the most vigorous and earliest plants and remove them to a slightly warmer house. Gradually increase the heat and moisture in order to secure better flowers. The main batch should not be hurried as they will respond much better when the longer and brighter days arrive. It is not desirable to allow very weak plants to flower, the removal of the buds as they appear being advisable.

THE KITCHEN GARDEN.

By ALLAN FALCONER, Gardener to the CHEADLE ROYAL MENTAL HOSPITAL, Cheadle, Cheshire.

Potatos in Pots.—Where early Potatos are required, the sets should have been set up in trays, and if all growths but one are rubbed off, three may be placed in each ten-inch pot half-filled with practically all leaf-mould and stood close to the hot-water pipes in a vinery which has been started about a month. In a short time the shoots will appear, when the receptacles should be moved to a bench near the glass; when six inches of growth has been made, afford a top-dressing and, after staking, transfer the plants to cooler quarters. By growing two batches in this way and having a succession of frames on hot-beds, a supply of new Potatos may be maintained from the middle of March until June.

Hot-beds.—These may be made up now in readiness for raising early vegetables and salads; failing long, strawy manure, much may be accomplished by the use of leaves only, for when well consolidated they produce a gentle, lasting heat. If standard-sized frames are placed over the leaves, and covered with lights, an increase of temperature is soon discerned, and this will be suitable for Carrots, Radishes, Turnips, Beet, Lettuce and Mint.

General.—Push on with trenching and digging on every favourable occasion, as the weather usually experienced at this time of the year is necessary to pulverise the ground; a good layer of manure spread over the ground before hard frost will help to prevent delay with this important work.

Cauliflower.—Make small sowings of this vegetable every fortnight until the middle of April, to follow the autumn-sown plants, to ensure a continuous supply. Place in gentle heat, and when germination takes place, remove to a position near the roof-glass. Directly the rough leaf shows, prick out the seedlings into boxes of soil which has been watered the previous day with boiling water. Under this method no further watering is required until the plants are ready for potting into sixties, or transference to boxes or frames; it is very successful against blackleg.

Brussels Sprouts.—These may be raised in the same way as Cauliflowers. For the maincrop, sow seeds in cold frames, protect in bad weather, and prick out the seedlings into other frames, for planting so soon as weather permits. Cabbage and Cauliflower may also be sown at the same time, early February being soon enough in cold districts.

FRUITS UNDER GLASS.

By T. PATEMAN, Gardener to SIR CHARLES NALL-CAIN, Brocket Hall, Hertfordshire.

Fruit Borders.—So soon as the vines or other trees have received their final washing, and the work of tying in of the young shoots is completed, the borders in which they are growing should receive attention with regard to top-dressing and new compost. Before proceeding with this work it will be found necessary to remove a small portion of the top soil, or sufficient surface soil may be removed until the young, fibrous roots are seen. If the borders prove dry, they should be watered thoroughly, using, if possible, water that is not too cold, for it is a great mistake to allow fruit trees or vines in their dormant state to suffer through lack of moisture at their roots; probably many failures may be traced to this error alone. These items completed, the work of top-dressing should be carried out forthwith. The new soil may be used in a fairly rough state, adding some broken charcoal and bone-meal, or some vine or Peach border compound, whichever is required. This should be thoroughly incorporated in the new compost by turning it several times. A light dressing of short manure will allow the water to penetrate evenly into the soil and also prevent the new compost from becoming caked and hard on the surface.

Tomatos.—Make a sowing of Tomatos, using a sandy, open compost. Do not sow too thickly. Plunge the seed-pans over a brisk bottom-heat, and so soon as the seedlings appear, place them on a shelf near the roof-glass, where they may obtain the maximum amount of light, but avoid all cold draughts.

PLANTS UNDER GLASS.

By J. COUTTS, Assistant Curator, Royal Gardens, Kew.

Grevillea robusta.—Young, well-grown plants of Grevillea robusta are very elegant, and prove very popular and useful for general decorative work. Seeds should be sown now in a temperature of 60° to 65°. One often hears complaints that the germination of this plant is very uncertain. Although this may in some cases be due to bad seeds, I feel sure the most common cause of failure is due to the flat seeds being covered too deeply. It is a good plan to insert the seeds on edge; I have germinated them very successfully in fine peat-moss litter mixed with sand. It is, I imagine, not generally known that young shoots of this plant may be rooted readily in a warm propagating case.

Jacaranda ovalifolia.—This is also an elegant foliage plant which is useful for decorative work, seeds of which should be sown at this time; as in the case of Grevillea, useful plants may be grown in five-inch pots. It is unfortunate that one seldom manages to induce this plant to produce its beautiful flowers—for this tree is a native of South America, and we lack the climatic conditions to grow it as a flowering subject.

Rivina humilis.—This plant, with its bright red fruits, which are borne in great profusion, is very useful for furnishing the greenhouse; it is easily raised from seeds sown at the present time in a warm house. As the plants increase in size they should be gradually accustomed to greenhouse conditions, successful cultivation presenting no difficulty, as it grows freely in any good potting compost, in a temperature of about 55°.

Browallia speciosa major.—This, the largest-flowered of all the Browallias, is an excellent subject for the greenhouse during the summer months, and for an intermediate house during the winter. It is best raised from seeds; plants resulting from a sowing made during February prove useful for autumn or winter flowering, while autumn-sown plants are best for a display during the summer. The species enjoys a growing temperature of about 55°, and should be pinched several times to induce a bushy habit. There is a white-flowered variety which is useful for contrast.

Cannas.—Where Cannas are grown for greenhouse decoration, a batch of strong rhizomes should be started in a house with a temperature of 70° to 75°; they should be placed in forty-eight-sized pots and when growing freely, shifted into six-inch pots, in which size they will flower, restricting the growth to one strong shoot. Cannas require very careful watering until they have made a quantity of roots and are growing freely, then they enjoy ample supplies of water and rich feeding. The following varieties will serve to indicate the type suitable for this method of cultivation:—J. B. Van der Schoot, President Mayer, Oiseau de Feu, Oiseau d'Or, R. Wallace, Beethoven, Meteore, Konigin Charlotte, Elizabeth Hoss and Alphonse Bouvier. The same varieties are suitable for growing on into large specimens, and for this purpose four to six rhizomes may be placed in an eight-inch or twelve-inch pot.

HARDY FRUIT GARDEN.

By T. E. TOMALIN, Gardener to the EARL OF BESSBOROUGH, Stansted Park, Emsworth, Sussex.

Newly-planted Trees.—All newly-planted trees should be mulched with some strawy material spread so far as the circumference of the hole. The trees should be securely, but not too tightly, tied to the stakes. In the case of standard trees, the stake should be cut off just below the lowest branches.

Work in Severe Weather.—During severe and inclement weather, much preparatory work may be done. Old and worthless trees may be grubbed up and the sites partly prepared for re-planting. Roads around fruit plantations may be re-made or put in order. Stakes may be cut and pointed; labels prepared and written; and the fruit nets examined and repaired.

Bush Fruits.—Gooseberries and Red and White Currants favour a similar habit of fruiting, and are therefore pruned on somewhat the same lines. All side or lateral growths should be shortened back to form fruiting spurs, from six to nine inches of the leading growths on each branch being left to extend the bush. Black Currants, on the contrary, bear fruits on the previous year's growth, so that the correct pruning of these consists in thinning out the bushes where necessary, by the removal of some of the older branches.

Plums and Damsons.—Standard trees of these fruits should be pruned fairly hard for the first two or three years until a good head has been formed, after which only tipping of the leading shoots, if these are still needed for extension is necessary. In after years the crop usually balances the growth, and subsequent attention, consists of an occasional thinning of the branches and the cutting out of dead and diseased wood.

THE FLOWER GARDEN.

By J. G. WESTON, Gardener to the DUKE OF DEVONSHIRE, Chatsworth, Bakewell, Derbyshire.

Twining Wall Shrubs and Climbers.—Although many of the hardy climbers retain their foliage until the winter is well advanced, for the purpose of pruning and thinning the growth it is very necessary to overhaul them thoroughly at least once a year; the next few weeks is usually a convenient time, provided the weather is sufficiently open. To be seen in their full beauty, climbers should not be restricted too closely during the summer; if this is done they rarely show their true characteristics. Judicious thinning and looping-up of the longest growths are usually all that is necessary, hence the necessity for thoroughly thinning and pruning at the present time, before growth commences. I refer principally to plants and climbers growing on walls, pergolas, trellis-work or fences—as distinct from those growing in the semi-wild garden—which are treated somewhat differently. As a rule, climbers are planted with a view to having the best floral effects over so long a period as possible; a mixed collection of plants is therefore to be recommended. They must not be all pruned in the same way or a season's flowers may be sacrificed; one sees numerous hideous examples of this kind of pruning in many gardens. Shrubs, such as Forsythias, Chimonanthus fragrans, Jasminum nudiflorum, some of the early-flowering Loniceras, such as L. fragrantissima, and Ceanothus dentatus, flower on the previous season's growth, and must therefore be left for the present, to be pruned immediately after flowering. Plants grown on walls, such as Ceanothus Gloire de Versailles, and others of the same class, such as Buddleias, Polygonum Baldschuanicum, Solanum crispum and the summer-flowering Jasmines, should be pruned well back to firm wood, only laying in sufficient of the best growths to fill the allotted space. Many choice evergreen shrubs, not strictly climbers, are grown against walls for their own protection. These include Choisya ternata, Azara microphylla, Myrtles, Camellias, Magnolia grandiflora, Grevilleas, Olearias and Holboellia (Stauntonia) latifolia. These are plants of slow growth, and simply require sufficient judicious pruning to keep them from encroaching on each other. Apart from the choicer varieties of Ivy, other good evergreen climbers are Smilax aspera, Lapagerias and Muehlenbeckia complexa. These require very little pruning, and if planted at intervals, with deciduous subjects, help to give the wall a furnished appearance in winter.

FOR NORTHERN GARDENERS.

By A. T. HARRISON, Gardener to the MARQUIS OF AILSA, Culzean Castle, Maybole, Ayrshire.

Sowing Early Peas.—In order to provide an early supply of Peas, which are always greatly appreciated, a sowing should be made now under glass, in boxes specially made for this purpose. The boxes should be about six feet long, five inches deep and not more than five or six inches wide; the former measurement will be about right for the top, while the latter will do for the bottom, thus allowing the contents to be easily removed downwards, when the time arrives for planting them outside. The bottoms should not be nailed, but simply tied on with stout cord in two or three places, which will remain sound enough to support them for the two or three months when they are in use. Peas may also be raised successfully in six-inch pots, but the number of these required to grow enough plants for several rows is very large; the boxes will be found more convenient in many ways. Dwarf, early varieties should be chosen for this sowing, and one of the best is Sutton's Pioneer, closely followed by the same firm's Hundredfold. No fire-heat is required to produce these early Peas, and excellent results have always been obtained by growing them in perfectly cool houses until they are well advanced, when they should be placed out-of-doors preparatory to planting.

Forcing Bulbs, Shrubs, etc.—It will be found convenient now to hurry on those shrubs which have been specially prepared for forcing; by potting them up during autumn and exposing them to all sorts of weather during the following months, the pots having been plunged to the rims in order to protect them from frost. On introducing these plants to a moderate temperature, they should be syringed frequently while plenty of atmospheric moisture should be maintained by damping-down between them occasionally. As growth proceeds the temperature should be gradually raised, always admitting plenty of air to keep the plants in good condition. Lilacs are especially useful for forcing, also several of the shrubby Spiraeas, Prunus, and many other shrubs. A few pots of the well-known Dicentra (Dielytra) spectabilis make a charming group for early work; this is probably one of the easiest plants to manage successfully, and by means of relays may be had in flower for several months. All the bulbs potted or boxed during autumn should now respond to higher temperatures, and be brought on in batches sufficient to meet requirements.

Hippeastrums.—The hybrid Hippeastrums, which have been resting since September, should now be started into growth again by immersing them for a time in tepid water before introducing them to a warm house. They may be had in flower over an extended period, and if well-fed during their season of growth, and properly ripened, may be grown and flowered successfully in comparatively small pots. Should repotting become necessary, it is best performed after the flower spikes are showing, taking care not to disturb the roots unduly; but a generous top-dressing in most cases will be found sufficient, picking out some of the old exhausted soil and replacing it with good turfy loam, mixed with dried cow manure and sand.

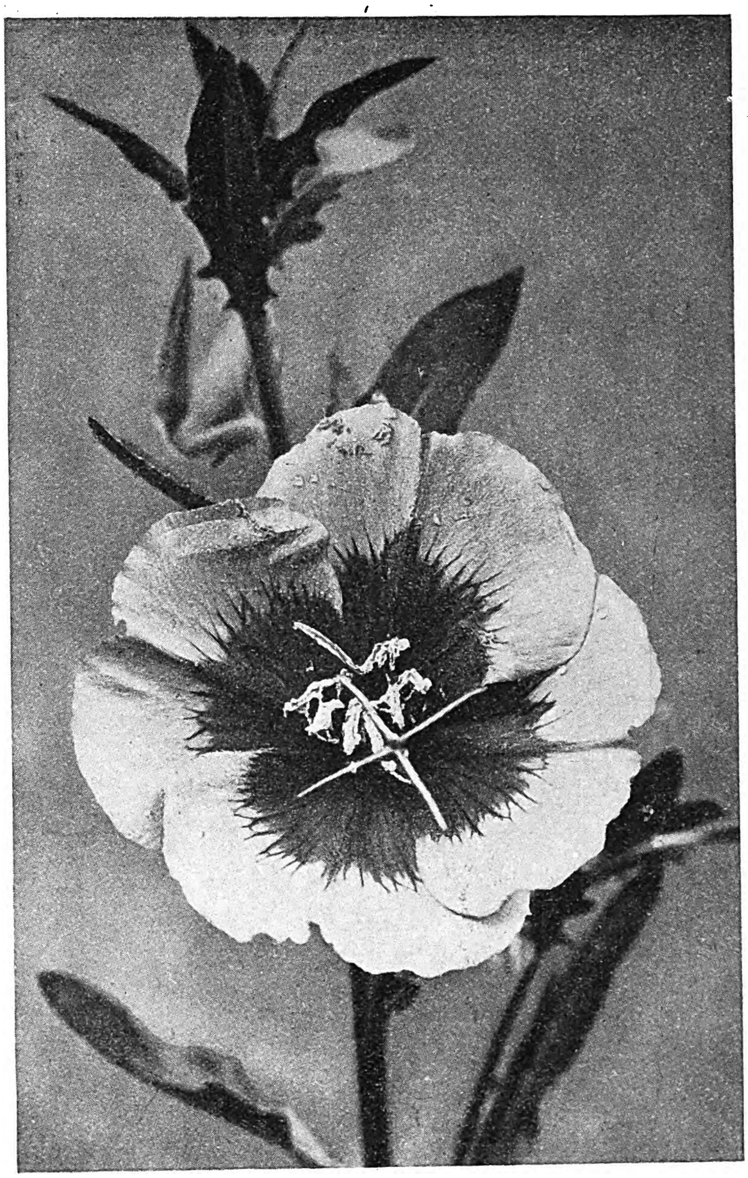

FIG. 28.—ŒNOTHERA DRUMMONDII.
(see p. 42).

Snowdrops.—These are later than is usual with us this season, but are now beginning to bloom in various parts of the grounds. If a few pans or bowls of these hardy flowers are required, they may be lifted when the flowers are showing and placed indoors, but nothing in the way of forcing should be attempted, as the Snowdrop resents heat, although it appears to respond to a slight protection from cold winds. The bulbs lifted in this way are very useful later on, if looked after properly when flowering is over, and replanted again. They soon re-establish themselves under suitable conditions.

RAMONDIA (JANKAEA) HELDREICHII.

The interesting Ramondia—or Jankaea—is said to be found in one locality only, and that place is Mount Olympus, Thessaly, the Home of the Gods. It is also stated that it has not been in cultivation for some years, and being such a beautiful plant is much sought after by lovers of alpine plants. The scarcity of the plant has no doubt been due to the danger of collecting, by reason of the brigandage which, for many long years, has been associated with travelling in the hinterland of Greece, and particularly on such a mountain as Olympus, where the frontiers of Greece and Turkey formerly met.

The mountain is now wholly in Greece; the "hide and seek" policy of the brigands is no longer possible, and the country and the people, I was given to understand, are quite safe and law abiding. Such being the case, I decided, in company with my brother, who was with me in Crete in the spring of 1927, to return to England by way of the Athens and Paris express, which railway skirts the foot of Olympus on the Gulf of Salonica. Accordingly, towards the end of April our cavalcade of mules duly reached the monastery of Haghios Dionysios where we were welcomed by the Hugomenos.

The monastery (Fig. 30) nestles picturesquely in the depths of a narrow and precipitous gorge at an altitude of about 4,000 feet, surrounded by forest trees of many varied species. It gives the traveller shelter, but no more; food, sleeping paraphenalia and cooking utensils must be provided by oneself, as also the cook, who in our case was an Italian.

Our first excursion was to seek the coveted Jankaea, and having explained to our muleteer the object of our quest, he accordingly led us to a spot further up the main valley, where Dr. and Mrs. Guiseppe, of Felixstowe, had been taken a month earlier by the same muleteer. Such plants as had been left untouched by the earlier party were to be seen high up in almost inaccessible spots; to reach them one had to traverse rocks of slab formation, covered with loose stones and grit, to a stone gully, up which one had to climb to reach a higher terrace of more slabs, with a loose, gritty surface. Of hand or foothold on these slabs there was none. The climb was dangerous, and I was not surprised to learn that Mrs. Guiseppe had a nasty slip on the first of the lower slabs.

The few plants we collected on this excursion were growing in crevices in limestone rock, on their sides, like Ramondia pyrenaica and facing north. They were not fully developed, having scarcely recovered from their winter rest; snow was still lying below in drifts and in gullies.

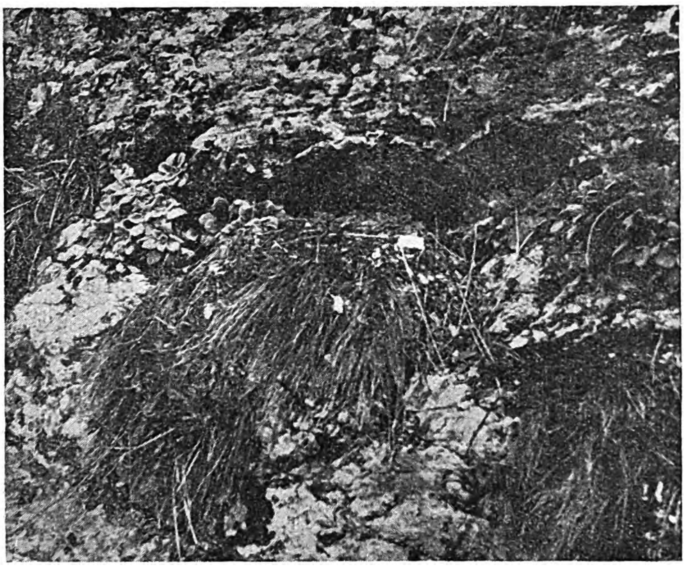

FIG. 29.—RAMONDIA (JANKAEA) HELDREICHII.

On another occasion, higher up the valley and in more accessible spots, we came across large colonies of the plant in sheltered glades, invariably with some rocky projection above their heads, though many plants, as will be seen in the picture accompanying this note (Fig. 29), were not so protected. At times we found them growing with Saxifrages. They are essentially mountain plants, and, as such, worthy of a place in our rock gardens, and I see no reason why they should not be grown as freely as other Ramondias and Haberleas. If there is any difficulty, it will be because their silver-green leaves are coated with a soft, thick, grey down, which in our damp climate would need the protection of a glass shelter, such as we give to Androsaces. The under side of the leaves is also downy, and of a pale, coffee-brown colour.

The soil in which I found the larger colonies contained much humus, was impregnated with sand, and by no means in a place where they would get much moisture. The leaves form flat rosettes the size of a small interpretation of a Ramondia, and at the bases of the outer and inner segments the silver-grey of the surface of the leaf seems to be incorporated with the pale, coffee-brown of the underside of the leaves. The flower, growing on a stem about three inches long, is, so far as I can remember, much like that of Ramondia pyrenaica, but of a smaller size and of a paler lavender. *G. P. Baker, Sevenoaks.*

ALPINE GARDEN.

RANUNCULUS PARNASSIFOLIUS.

This species which was illustrated in Fig. 14, p. 25, is, in its best forms, one of the choicest members of the family. Its dark, succulent, heart-shaped leaves, and large, snow-white flowers combine to make it one of the chief ornaments of the moraine garden. There are, however, geographical forms of this which produce few or no petals and are not worth growing. The best forms are found in the Dolomites, where the species occurs in wet and heavy clay, forming tufts of elegant leaves and producing beautiful, large flowers in abundance, on stems up to six inches high. R. parnassifolius inhabits high elevations in both the Alps and Pyrenees, and is usually found where it receives moisture from the melting snow. In this country it may be successfully grown under moraine conditions, but with stiff, loamy soil within reach of the roots, below the shingle. Like all the other members of this family, it requires abundance of moisture when growing. Seeds, which are freely produced, should be sown so soon as they are ripe, and will then germinate in the following spring. *W. Irving.*

OURISIA CAESPITOSA.

Probably no other known Ourisia will ever rival in the affections of the gardener the lovely Ourisia coccinea, whose small, scarlet trumpets are the joy of every garden where (as is not always the case) they are freely produced. Even the gardener who pins his affections to the cultivation of plants belonging to the British Empire, not a very numerous class (for the average lover of flowers likes to have the best things from all parts of the globe) must admit that none of the Ourisias we have yet received from the Dominion of New Zealand can equal in brilliancy this alien. Yet there are several most interesting plants among these antipodean Ourisias, and I observe seeds are offered of some of them.

I have grown O. caespitosa, one of these, and desire to write briefly of its cultivation. It is a low, creeping plant, forms a close-growing tuft of nearly sessile leaves, and bears a few white flowers on two-inch stalks. It is one of the plants of mediocre merit from a garden point of view, and what my departed correspondent, the late Mr. W. E. Gumbleton, would have called a "tush" plant, still lower in the grade being the "pooh" one.

O. caespitosa needs a well-drained soil of a light character, but it must be fairly moist in summer, and a shady position appears to suit it best. *S. A.*

FLOWER GARDEN.

ŒNOTHERA DRUMMONDII.

This Œnothera, which is named after the collector who discovered it in Texas, belongs to a section of the genus all of whose members are included in the genus Raimannia by American botanists. It varies in height from one foot to two feet, and is of decumbent habit, furnished with soft downy leaves. Many of these are quite entire and small, while others are toothed and much larger, and less downy. Like our common Evening Primrose, it is of annual or biennial habit, and bears large flowers from two inches to three inches in diameter. In many books the colour is given as pale yellow, but specimens show flowers with a yellow centre fading towards the outside to a very pale rose colour. This would account for the dark blotch shown in the centre of the flower in the illustration (Fig. 28, p. 41), in which the deeper yellow has come out darker than the lighter and outer shade.

It is an easily grown plant and is figured in the *Botanical Magazine*, t. 3,361, with yellow flowers. *W. I.*

GAZANIA RIGENS (SYN. SPLENDENS).

Gazania rigens is really the correct name of this old garden plant (Fig. 33, p. 47), although some authorities have been inclined to regard G. splendens as a variety of G. rigens. There seems to be no definite record of its introduction, but it was cultivated by Philip Miller prior to the year 1755; there also seems to be a doubt as to its locality in South Africa, although some authorities have suggested Saldanha Bay, or the neighbourhood of Tulbagh. The plant is figured as Gorteria rigens in the *Bot. Mag.*, t. 90; it is also figured as Gazania splendens in the *Floral Magazine*, Vol. I, pl. 19, and in *Ill. Horticole*, 1860, Vol. VII, pl. 235. There is also a record and a dried specimen of what was described as a very fine variety called purpurea, the flowers being described as reddish-purple, with a dark blotch at the base of the petals, and a disk of purplish-black; a very desirable plant, according to the description.

Gazania "splendens" was, at one time, a popular garden plant and commonly used for summer bedding, but is now seldom seen; indeed, a variety with variegated leaves seems to be more common, although it is by no means such a good plant as the type, which has linear-lanceolate, leaves, glossy-green above, with a white, felted under-surface; sometimes a stray pinnatisect leaf occurs.

The bright orange-yellow flowers, with a basal ring of black, with white spots, are produced freely over a long period, and have the merit—which all Gazanias have not—of opening even in fairly dull days. This Gazania, in common, with all the family, are children of the sun, and are seen at their best when planted in poor soil in a hot, sunny position. In such positions this species is nearly hardy in favoured parts of the country. Propagation is easily effected by means of cuttings secured towards the end of summer; they root readily in a cold frame, where they may be wintered with some protection during severe weather.

There are several species of Gazania, but at present there are few in cultivation, with the exception of the yellow-flowered G. longiscapa. There used to be a number of beautiful hybrids, of continental origin, but they also seem to have disappeared from cultivation. Those who are interested in the Treasure Flowers will find a description of the species by N. E. Brown in *The Garden*, 1895, Vol. XLVII, p. 288. There is also a monograph of the genus by M. Jules Rudolph in *Flora and Sylva*, Vol. III, p. 139, where he describes many of the garden hybrids. *J. Coutts, Kew.*

INDOOR PLANTS.

RHABDOTHAMNUS SOLANDRI.

THIS somewhat uncommon shrub, a native of New Zealand, and incidentally apparently the only Gesnerad to be found in that country, might well be afforded a place in the cool greenhouse; in the warmer parts of the country it might even be given a position in the open, but the chief difficulty in this respect seems to be its susceptibility to winter dampness. In the greenhouse it will grow and flower freely for several months if planted in light, loamy soil, to which a small quantity of peat may be added.

It forms a bushy plant from one to three feet in height, with numerous slender, hairy growths clothed with thin, oval or orbicular, coarsely-toothed leaves, from the axils of which the flowers are produced on slender stems. These are rich orange in colour, longitudinally striped with brownish-red markings. Rhabdothamnus Solandri (Fig. 27, p. 39) was described in *The Gardeners' Chronicle* more than twenty years ago; it is also figured in the *Botanical Magazine*, t.8,019. *F.*

RHODOCHITON VOLUBILE.

THIS is one of the most beautiful of the smaller climbers for furnishing the roof of a greenhouse, and for this purpose may be treated as an annual, although it is seen at its best the second year from sowing. To obtain the best results during the second year, the plants should be planted in a well-drained border and trained up under the roof. If grown as an annual, it may be confined to pots, growing the young plants on until they are in six-inch or seven-inch pots, in which size good examples may be flowered. The thin, flat seeds should be sown sometime during this month in light, sandy compost, covering them very lightly. *C.*

CHIRITA LAVANDULACEA.

THE Chiritas are beautiful, free-flowering plants which need the protection of a warm greenhouse. They are herbaceous subjects, averaging about eighteen inches in height, with stout, succulent stems which have a peculiar semi-transparent appearance. The leaves, which are about five inches in length and three inches in breadth, have this translucent appearance, and are covered with a dense mat of short, silvery hairs. From the axils of the leaves the flowers are produced in clusters of about half-a-dozen. These are slightly over an inch in length and three-quarters-of-an-inch indiameter, tubular, and most daintily tinted.

C. lavandulacea I consider to be the gem of the genus; it has a snowy-white tube, with a lilac-tinted mouth. C. depressa has violet blossoms; those of C. Walkeri are of a delicate yellow, and C. zeylanica produces purple flowers. As these species are easily cultivated they deserve to be more generally grown.

Propagation may be effected by seeds and cuttings, and leaves may also be used, as they readily form new plants in the same manner as most Gesneraceous plants, to which family the Chirita belongs. Seeds should be sown in spring in a finely-sifted compost of equal parts of peat, loam and leaf-mould, with the usual amount of silver sand to secure porosity. To hasten germination the pots may be plunged in the propagating case, and when the seedlings are large enough to handle they should be potted off into three-inch pots, using a similar compost to that advised for the seeds, but in a rougher state. Later on, they should be re-potted into five- or six-inch pots, which will be large enough to flower them in. No pinching or stopping of the shoots is necessary, and as they are of sturdy growth they do not require supports of any kind.

From seeds I received from Germany in the spring of 1927 I raised a magnificent batch of plants which commenced to flower in August, and at the moment of writing (January 12) there are still a few belated blossoms left amongst the ripening seed-pods.

After flowering, it is best to remove the plants to a cooler house and to withhold water sufficiently to give them a few weeks rest, after which they may be shaken out and repotted into fresh compost, in smaller pots. By this method vigorous plants will be obtained for the following season. *G. F. Gardiner, Bristol Botanic Gardens.*

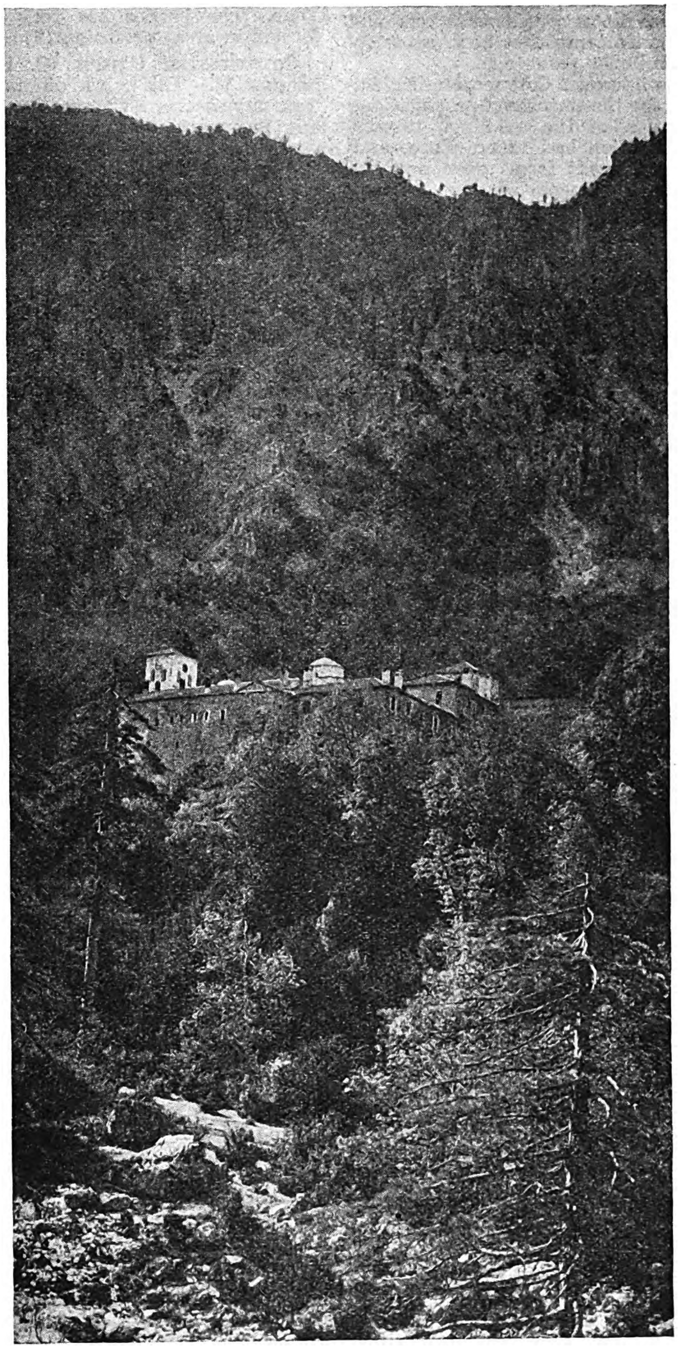

FIG. 30.—MONASTERY OF HAGHIOS DIONYSIOS.

PLANTS NEW OR NOTEWORTHY.

TWO NEW HYBRID COTONEASTERS.

Various species of the genus Cotoneaster have achieved considerable popularity as ornamental shrubs or for training along walls or fences, their principal attraction being the mass of colour formed by the berries during the autumn and winter, when decorative outdoor plants are somewhat scarce. Through the kindness of Messrs. Waterer, Sons and Crisp, Ltd., I have been able to see a number of hybrids which have arisen at their Bagshot Nurseries. One or two of these are of considerable horticultural value, and an attempt has been made to discover their probable parentage.

Seeds of the well-known Cotoneaster frigida, Wall., were sown for the purpose of propagation, but on examination of the seedlings it was found that hybridisation had taken place, and that at least six different forms were present, including a few specimens of the original C. frigida. The two of these most likely to be of importance from a horticultural point of view are described below.

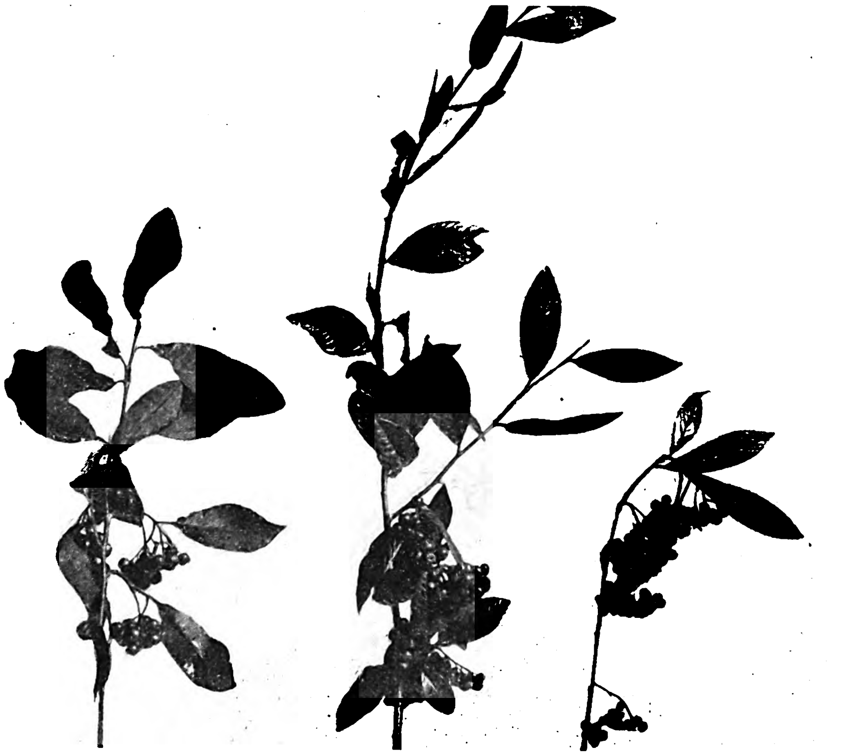

FIG. 31.—A NEW HYBRID COTONEASTER.
Left, Cotoneaster frigida, Wall; Centre, C. Watereri, hyb. nov.; right, C. rugosa, Pritz. ex Diels.

Cotoneaster Watereri (C. frigida ♀ × C. rugosa ♂).—This plant, which is to be listed for horticultural purposes under the name C. Watereri, is almost undoubtedly a hybrid between C. frigida, Wall., and C. rugosa, Pritzel ex Diels. Although the male parent has since been removed, I am informed that a shrub of C. rugosa was growing near the C. frigida tree at the time when the seeds were collected from it. In using the name C. rugosa for the male parent, I am following the conclusions of Dr. Stapf (*Bot. Mag.*, t. 8,999) that C. Henryana, Rehder and Wilson, and the earlier C. rugosa, Pritzel ex Diels, are synonymous. In nearly every character the hybrid is intermediate between the suggested parents (Fig. 31). In habit it resembles C. frigida in forming a distinct trunk, and when full-grown it will no doubt form a small tree of similar dimensions. At the same time, the branches are arched and drooping, like those of C. rugosa. The leaves are intermediate in shape and texture, being distinctly broader than those of C. rugosa, though they retain to a considerable extent the stiffness and rugose habit of the latter. The berries are large and handsome, like those of C. frigida, but remain plump and shiny as in C. rugosa; while in C. frigida they tend to be slightly wrinkled. As an ornamental shrub or small tree, there can be no question as to the value of this Cotoneaster. It is tidier in appearance than C. frigida, owing to the stiffer leaves and more graceful habit; the main growths are upright, but the side-shoots grow out and arch downwards, displaying the fruits to fine advantage. If the weather be mild it retains its bright, glossy green leaves right through the winter, and the berries until just before Christmas, while with protection from birds they would probably last well into the New Year. The berries are very bright and are formed in great profusion (Fig. 32).

Cotoneaster Crispii (C. frigida ♀ × C. pannosa ♂).—This hybrid differs rather strikingly from any species of Cotoneaster, and if its hybrid origin were not known would certainly have been described as new. It has leaves like those of C. pannosa, Franch., and large red berries very like those of C. frigida, Wall. The foliage is very neat, while the berries are finer than those of the male parent, C. pannosa. It retains these until very late in the season. The horticultural value of this hybrid is still being tested. If it proves to be sufficiently attractive it will be sold under the name of C. Crispii.

The remaining forms which arose from C. frigida seeds at the Bagshot Nursery are of interest botanically, but of little horticultural value. *A. W. Exell, M.A., F.L.S., Department of Botany, British Museum, Cromwell Road, South Kensington.*

TREES AND SHRUBS.

CHIMONANTHUS FRAGRANS.

One of the most beautiful of our winter-flowering shrubs is Chimonanthus fragrans, the only species of this genus. Its deliciously scented flowers, which are brownish-yellow, marked with purple inside, appear during December and last well into January, hence the popular name, Winter Sweet. They are borne in a graceful manner on the ripened annual shoots. Not only is this deciduous shrub delightful as regards its very sweet scent (a few flowers, when laid in a saucer of water will perfume the whole room), but its beauty when seen at its best, is a real pleasure, and a sight not soon forgotten.

It grows to a height of about eight feet, and to secure the best effect should be planted near a sunny wall, if possible, near the dwelling-house, in a rich and peaty soil; it should be pruned during April to encourage growth. Treated thus, it will never fail to give an abundance of blossom.

It may be propagated by layering in autumn, or by sowing seeds in gentle heat during March or early April. Personally, I prefer the former method as being the most suitable for producing flowering plants in the shortest time. *R. H. Crockford, Horsley Hall, Gresford.*

SARCOCOCCAS.

Although natives of the Himalayas and China, the Sarcococcas are evidently quite hardy in this country, and I recommend them without any misgivings. These plants are very accommodating, and second to none for shady places, especially under trees. I am not sure that they require the amount of moisture at the roots recommended by some gardeners; personally, I have seen them do very well in positions where the moisture was quickly absorbed by the roots of the trees above them.

The flowers are borne chiefly in the axils of the leaves, on the well-developed growths made during the previous summer; therefore, the production of these should be encouraged by cutting out those that are thin and aged. An occasional top-dressing is necessary for plants with such a fibrous root-system; specimens of reasonable size may be divided and planted until the end of June.

I have met very few of these shrubs in private gardens; personally, I am surprised that they are not grown in large quantities and distributed at a cheap rate to rival the common Mahonia.

The several species are distinct, all of them producing very fragrant flowers during February, a time of the year when outdoor flowers are scarce and welcome, while they produce an autumnal effect with their coloured fruits, although these are not very abundant.

Possibly the most attractive of the species is S. pruniformis. It is of upright habit, with red-tinted, hairy growths, two to three feet in height, which are clothed with rich, dark green leaves. These are so arranged as to permit a good view of the flowers which are produced in the axils.

The dwarf of the family is S. humilis, which was, I think, found by Mr. G. Forrest, growing in dry, shady places; it is seldom more than twelve inches in height. It blossoms very profusely, the attractiveness of the male flowers being enhanced by the reddish colour of the stamens, while they are rendered more conspicuous by having longer pedicels than is usual.

S. ruscifolia forms a rather bushy plant, with stiff, branching growths, clothed with thick, glossy-green, ovate leaves. The flowers, the majority of which are female, are followed by bright red fruits. *C. F.*

AZARA INTEGRIFOLIA.

This evergreen shrub, of which we have just received an extremely fine flowering spray from Mr. W. Slinger, of the Donard Nursery Co., was introduced from Chili in 1832, but it is still comparatively rare. It forms a bushy plant ten to twenty feet in height, with branching growths clothed with glossy deep green, obovate or oblong leaves. The flowers are produced in small axillary clusters; they are golden-yellow in colour and fragrant, and are produced in great profusion very early in the year.

Azara integrifolia might well be tried in positions similar to those prescribed for the better-known A. microphylla; possibly a sheltering wall will provide the solution to its successful cultivation, with loamy soil, to which a quantity of peat may be added. As in the case of A. microphylla, propagation may be effected by the insertion of cuttings of ripened growths, taken with a heel where possible, in sandy soil in a frost-proof frame or greenhouse; where large plants are required in so short a time as possible, layering may be resorted to.

IRISH HORTICULTURAL REVIVAL.

In Irish horticultural circles surprise that was felt at the cessation of *The Garden* was quickly counteracted by the welcome announcement that *Irish Gardening* is to be revived under the title *Irish Gardener and Horticultural Review*, by Mr. Thomas Shaw, President, Irish Plotholders' Union. *Irish Gardening* needs no introduction to English horticulturists, and not a few regretted that it was compelled to suspend publication during the War and the troubled times which have followed.

Where progress ceases, retrogression immediately begins, there is no intermediate stage—that we know only too well. Ireland, in common with other nations, has suffered from the consequences of world war, and furthermore from national unrest, which, simmering for a number of years, came to a head in 1916 and continued up to the end of 1922. The influence of the national disturbances had disastrous effects on Irish horticulture; we lost many fine and interesting gardens, while others have had expenses greatly curtailed with a consequent lowering of their previous high standards of excellence.

A definite turning point has now come, retrogression has ceased, progress begun. Already the Royal Horticultural Society of Ireland has increased its membership considerably and enjoys a higher status than ever before. Last season the Society's Winter Fruit Show was revived, which, while not a financial success, carried a clear note of expectancy and optimism. The National Botanic Garden at Glasnevin has been most successfully steered through difficult times, and well maintains its place for exceptionally high standards of excellence, interest, and perfection of keeping, laid down by a former Director. Dublin parks have been considerably improved, being maintained in an effective and orderly manner, presenting features of public interest throughout the year. St. Stephen's Green, in particular, is brighter—in no way offensive—merely restful, cheerful and well-toned. Hundreds of children from the confines of dreary slums love and respect this park, which to each and every one of them is their very own. The Superintendent receives many a blessing from grateful parents for providing so cheering, pleasant and bright an outlook for their little ones, and imposing so few regulations.

So, following large and still well-maintained gardens, such as Mount Usher, Co. Wicklow; Powerscourt, and the Japanese Gardens in Co. Kildare, come small holdings, suburban and town gardens of from four or five acres to a few hundred square feet. It is to these we look for future developments, and, incidentally, a very greatly increased demand for information and supplies. Encouraged by the examples of already famous gardens and parks, enthusiasts seek "fresh woods and pastures new" to elaborate their own ideas, and it is in influencing and moulding sound, practical schemes into a form intelligible to a non-horticultural people that the work of the *Irish Gardener and Horticultural Review* will chiefly lie. *Brendan R. Mansfield.*

KEW NOTES.

The snow has, fortunately, disappeared with pleasing rapidity. One very notable and valuable trait about the snow is the way it cleans the leaves of evergreens, and the bark on twigs, removing the soot much better than days of rain. Although the sharp frosts and snow dimmed the mid-winter display of outdoor flowers for some days, a few blooms still survive. The most notable plant is the Chinese Witch-Hazel, Hamamelis mollis, which is delightfully in flower and seems quite weatherproof; with its pleasing, fragrant, rich golden-yellow blossoms it is, without doubt, the most valuable shrub of the genus.

Although an old garden climber—it was first introduced from China by Robert Fortune, when collecting on behalf of the Horticultural Society, in 1844—Jasminum nudiflorum deserves to be much more widely grown. It thrives on sheltered and half-shaded walls and fences in by no means ideal positions, where it would be useless to plant many climbers. The bright yellow blossoms are freely produced from November to February. Even now, despite the recent bad weather, one large plant on a sheltered north-west wall is bright with flowers.

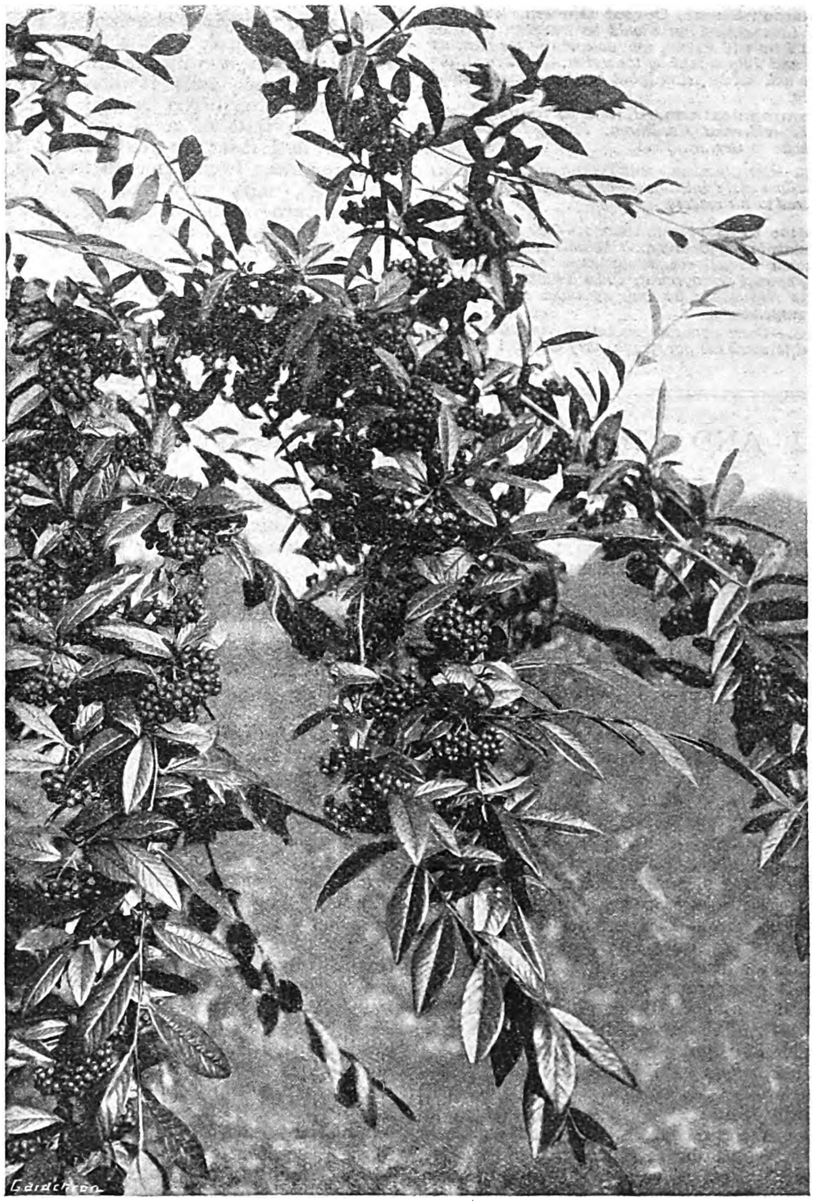

FIG. 32.—COTONEASTER WATERERI IN FRUIT.

As one would expect, the birds have taken liberal toll of the fruits on trees and bushes during recent weeks. The most notable survivals include Cotoneaster rotundifolia, which I should not hesitate to describe as the most attractive shrub in the open air at Kew at the present time. In addition to the group in the Cotoneaster collection, at the south end of the Temperate House, there is a large bed along the Cumberland Walk near the Orchid houses. The scarlet-red fruits are among the largest and brightest-coloured of the genus. The group of a dozen or more plants, with stiff branches, five feet to six feet in height, very freely besprinkled with fruits, makes a delightful winter display. It is particularly noticeable how the birds leave the fruits of this Cotoneaster alone. In mild winters the bushes may be described as semi-evergreen, but at the present time the twigs are practically leafless. The only other Cotoneaster at all outstanding in fruit at the present time is C. Harroviana. This is an attractive evergreen bush of loose, open habit, about six feet high, with clusters of bright, red fruits.

On the walls and in the open borders, Pyracantha Gibbsii and the variety yunnanensis are showy evergreens that are fruiting freely. The last-named has slightly smaller, and more richly coloured fruits than the type. One plant, trained to an east and (round the corner) south wall in the herbaceous ground, is strikingly beautiful. Rather closely spur-pruned, its clusters of fruits are very freely dispersed among the rich, dark, evergreen leaves. Pyracantha angustifolia, grown in some gardens as Cotoneaster angustifolia, is an evergreen on the borderland of hardiness at Kew, and can only be successfully grown against walls, where the clusters of orange-yellow fruits are freely borne along the branches.

Crataegus Carrierei is one of the most ornamental and valuable Thorns when in flower, in fruit, or when its leaves are coloured in autumn. At the present time a standard tree in the Thorn Avenue is very attractive, being freely clothed with large, orange-yellow and red fruits; these usually hang on the tree until March. Being a hybrid, grafting is the best method of increase. *A. Osborn.*

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CHILI AND THE ANDES.

VI.—Valparaiso.

VALPARAISO looked green and very beautiful when we made an early morning arrival on September 7. After the long sea voyage, and especially after the rather grim desert coast of North Chili, it seemed well-named Valparaiso, or Vale of Paradise. The town lies round the wide curve of the bay and spreads up over the steep, green hills behind.

We spent a week exploring these hills, making an excursion or two into the country, and visiting one or two gardens in the neighbourhood. I know few things more enchanting than being in a country where almost every wild plant is entirely new and strange, and where the exceptions—the few plants one does know—are subjects one has known all one's life as everyday plants of cultivation, plants one obtains from a nursery, or sees in a greenhouse at a botanic garden. I experienced this within an hour of landing, on a short motor run into the hills outside the town, and have been experiencing it ever since. In that first view of Chilian roadside weeds I saw shrubby, golden, Calceolarias—reminiscent of British bedding-out, and Salpiglossis in gold, and buff, and purple—recalling sumptuous exhibits at Chelsea. Both looked curiously graceful and self-possessed, waving wildly from a steep rock bank. Botanic gardens were represented by giant Cereus chilensis, eight and ten feet high, growing where, in England, Brambles and Cow Parsley would have grown. On that first short drive I saw countless thrilling flowers I had never seen before.

Almost within an hour of landing in Valparaiso, I came up against a horribly difficult problem. I began to find all sorts of wild plants of great beauty, and said to myself, "This ought to be in cultivation—I must send home seeds of that." And then the thought would occur that of course so fine a thing must have been sent home years ago; and yet, on the other hand, why has one never seen it? Can it be that it has been tried, and found not quite hardy, and at the same time not quite good enough to hold its own as a greenhouse plant; or is it that it is just a difficult brute to grow? The only other possible explanation might be that like many another good thing, it has been crowded out of cultivation in the scramble for new plants. The question of hardiness is difficult to account for. One finds all these lovely things growing side by side with plants which one has found absolutely hardy in England and others which have never pretended to be hardy. Anyway, it is impossible to go collecting in Chili with a library of books big enough to give the past history in cultivation of all the plants one may find. The only course to take is to be severely critical as to what one sends home, and to send only such things as have real merit, either as hardy or as greenhouse plants—with, perhaps, a discreet sprinkling of botanical curiosities—for the curious, and labelled as such.

On my first day of real collecting I came upon a plant which started all the doubts and wonderings which I have just described. This was Pasithea coerulea. I saw it growing wild, and I saw it springing up in garden paths, folks were carrying bunches of it in trams, and it was for sale on the flower stalls in the streets; when a wild flower finds its way to the flower stalls it has real worth to recommend it. The foliage of Pasithea is similar to that of a Hemerocallis, although thinner and drier in texture. It throws up a flower stem from three to five, or even six feet high, stiff, wiry, and graceful, with an inflorescence which suggests an Asphodel, although fuller-flowered, less stiff, and more shower-like; the starry flowers, each half-an-inch across, are an intense Cineraria-blue. A six-feet specimen will carry a wide-based, tapered panicle two feet long, with hundreds of lovely, brilliant flowers. Even if not perfectly hardy in England—I have heard of it growing in the open in Hampshire—it is such a superb thing, and so excellent as a cut flower, that it should be very well worth growing as a cool-house or a cold-frame plant.

The roots of Pasithea coerulea are curious; a deep-questing system of thin, wiry fibres, like horse-hair, with, here and there, odd little, watery tubers. Bold, black, glossy seeds are freely produced. For culture, in the open. I would suggest light, warm, well-drained soil, or even coarse scree, a hot, sunny place, and, above all, a raised position—a bed one foot or more above the surrounding ground level.

Another good plant which I found almost at once was Tecophylaea violaeflora. This is, perhaps, not quite so splendid as the only other member of the genus, the rare T. cyanocrocus, with its large, solitary flowers of intense pure Gentian-blue. The flowers of T. violaeflora are about the size of those of Scilla sibirica, and the same clear blue, but in shape, irregular, and curiously like a Violet—whence its name. White-flowered and lilac forms were fairly common, but were not nearly so attractive as the pure, brilliant blue. At Valparaiso the flowers were almost always solitary, on three- to five-inch stems, but in other districts six or seven flowers on a stem were frequent. I learnt one interesting fact when collecting Tecophylaea violaeflora, viz., that individual bulbs do not live many years. I found great numbers of tiny bulbs in the ground, and also found many empty bulb-jackets—bulbs which had evidently flowered for a season or two, exhausted themselves, and died. I concentrated more, therefore, on collecting seeds rather than on mining for bulbs; I believe that to keep this charming plant for long in cultivation, we shall have to induce it to set seeds and by that means keep up a succession of young bulbs. Another hint as to its culture. I found the finest plants, those with six and seven flowers to a stem, on a steep, rocky mountain side, in coarse scree soil, where they had an annual spring rainfall of about six inches, and for the rest of the year torrid drought. At the time of writing, I have not found T. cyanocrocus, but I think the same conditions as to seeding, drainage and summer sun-baking apply to it as to T. violaeflora. No one seems to have seen T. cyanocrocus in Chili for a great many years, although certain folk are fully alive to its value and have made efforts to rediscover and collect it.

A broad-leaved Sisyrinchium, with straw-yellow flowers, which I take to be S. striatum, is plentiful about Valparaiso, but a prettier, and far more interesting species which I have collected here, and in several other districts, has rose-pink flowers. It is of Rush-like habit, usually about eighteen inches high, and hangs out its pretty pink flowers with reflexed petals, one or two at a time. The plant varies a good deal in different districts in the size of its flowers and of its seed capsules, but I suspect that all are forms of the same species, Sisyrinchium roseum, or perhaps, S. scirpiforme.

Of Verbenas I saw, around Valparaiso, a great many species, some rather interesting, some quite attractive, while of others all one could say was that they were Verbenas. The best of these, and as it happened the commonest, although as yet I have not found ripe seeds, is a trailing, very free-flowering species, with heads of cool, rosy-lilac blossoms (C.E. 285).

Alströmerias, with their queer, twisted leaves, were pushing up everywhere, but were nowhere, as yet, in flower. Huge clumps of Lobelia Tupa were flowering in the hollows of the hills, interesting to see, but disappointing in flower. It comes up like a very fine rocket, and goes off like a very dull squib.

Two species of Puya, P. chilensis and P. coerulea, were remarkably handsome, flowering in the hills. In habit they are rather like Yuccas, but the leaves are longer, more tapered and sprawling, and armed all along their edges with terrible, recurved thorns. The ten feet to twelve feet flower spikes are branched horizontally, and the Yucca-like flowers are, in P. chilensis, a delicate, greenish-yellow; in P. coerulea, a curious and very attractive blue-green. In a shady hollow, I came upon a solitary plant of Anemone decapetala with one lovely powder-blue blossom, an inch or so across.

A very promising plant which I found on my first day of exploration was a Leucocoryne. On a wiry, eighteen-inch stem, it carried an umbel of five or six flowers, in shape and size not unlike those of Chionodoxa Luciliae, but of a soft, delicate lilac colour, almost a French-grey. A charming plant, and excellent for picking, save for its unfortunate Garlic odour. A curious and rather beautiful bulbous plant is Trichopetalum stellatum. Roughly, it is like a twelve- or eighteen-inch Scilla, with white, starry flowers whose petals are covered on their upper surface with a furry beard, like that of Menyanthes—the Bog Bean. A quaint plant this, but not first-class; worth a place in the garden, but not worth any great fuss if it is reluctant to grow amiably as a hardy bulb.

Loasa tricolor was a weed, and a very beautiful weed, which I decided to allow to remain a weed. Its complicated golden flowers, with their fair crimson spots, are handsome, but the leaves are coarse, and sting more savagely than Nettles; to my mind it *looks* a weed, and could never look anything else, so I am not going to encourage it by sending seeds home. *Clarence Elliott.*

SOUTH AMERICAN PLANTS.

Mr. Clarence Elliott's interesting notes in a recent issue of *The Gardeners' Chronicle* (p. 508, Vol. LXXXII) on his journey to the Andes, and especially his reference to the golden flower resembling Sternbergia, which he found growing in the fields around Lima, brought to my mind the many fine bulbs and plants which my late father, Dr. Alexander Wallace, of Colchester, received from that great plant collector, Roezl, between 1870 and 1874.

I have looked up old catalogues wherein are described the interesting collections of those days and I thought at first that the yellow-flowered bulb mentioned might be Hymenocallis (Ismene) Amancaes, which grows in profusion in the meadows around Lima, but flowers there, according to the notes, in June and July. Mr. Roezl sent us large importations of this species in those early days, and described how, on certain festive occasions, the South American ladies decorate their hair with the fragrant blossoms of this glorious, golden-flowered bulbous plant. It is a pity that it is not in more general cultivation to-day, as old illustrations show what a fine plant it is. I was too young at the time to have any recollection of its flowering at Colchester, but I do know that some of the collected bulbs produced very fine spikes.

We also received Chlidanthus fragrans major from Bolivia, which was described as having yellow, fragrant flowers, twice as large as those of the old type. It appears quite probable that this might fit in with Mr. Elliott's golden-flowered bulb.

How interesting it would be to have the life history and wanderings of a man like Roezl published in book form! He apparently started bulb collecting on the Pacific coast of the United States, where he found Lilium Roezlii. Then he travelled into Mexico, whence in 1873, he sent my father, among other plants, Cyclobothra lutea and Milla biflora. Odontoglossum Roezlii was named after him. He next explored the Peruvian Andes, whence he also sent home many bulbous plants.

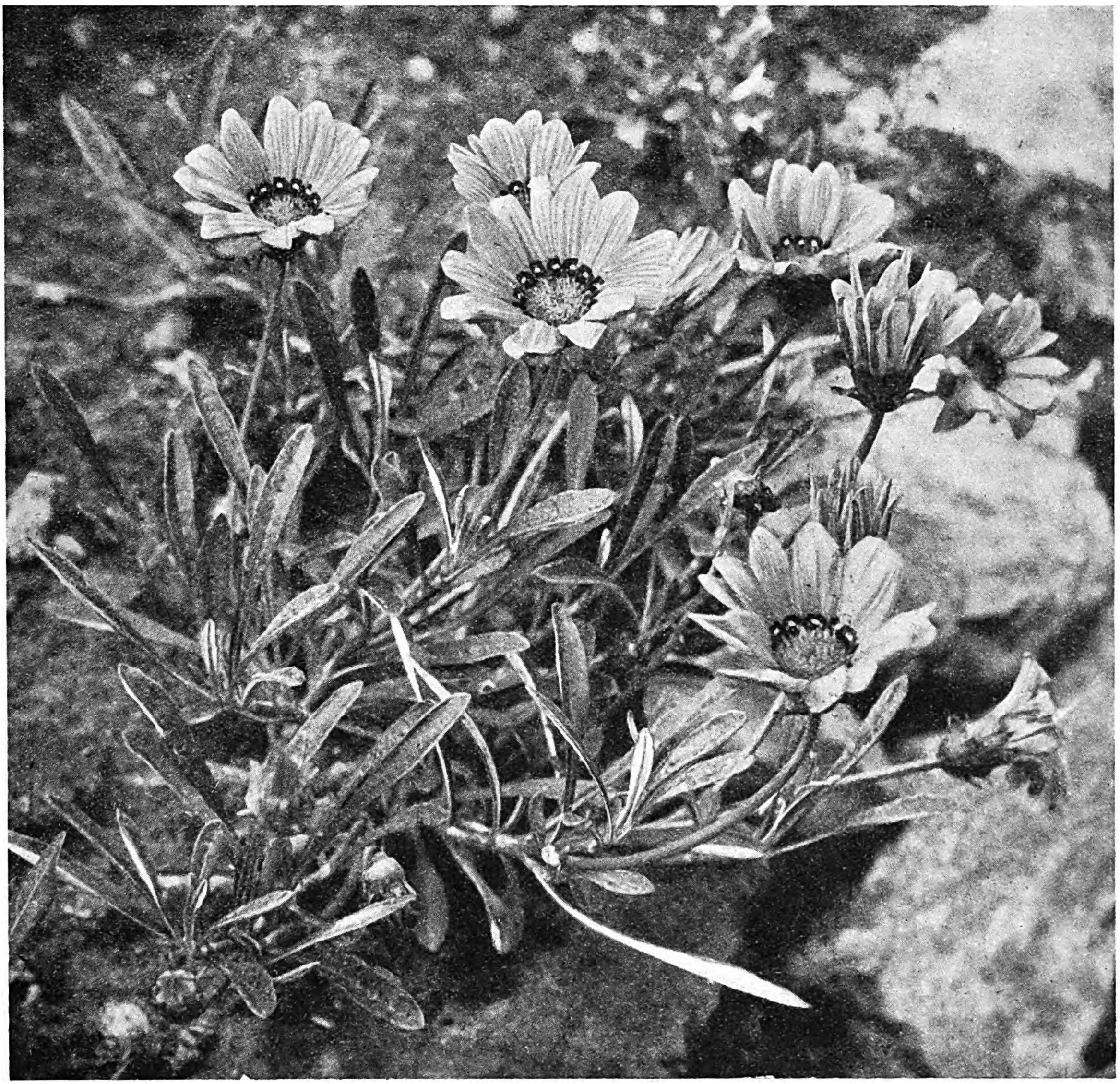

FIG. 33.—GAZANIA RIGENS (SYN. SPLENDENS).
(see p. 42).

I find listed in 1874, the following:

Phaedranassa rubro viridis ? (*non Chloracea Roezl in literis*).—A fine species with a head of twelve to sixteen pendant flowers one-and-three-quarter inch long; colour, rich crimson with cream points. A magnificent new species hitherto undescribed.

Phaedranassa vitellina ? (Roezl).—A new species, probably a Stenomesson, described as having brilliant orange-scarlet flowers, regarded by Mr. Baker (of Kew), after examination of the drawing and dried flowers, as nearly allied to Stenomesson aurantiacum, *Bot. Reg.*, 3,042, and S. coccineum, but somewhat different from either; it must therefore be regarded as a new and fine species, probably a Stenomesson.

Phaedranassa ventricosa ? (Roezl).—Will probably turn out to be nearly allied to, but superior to, Pentlandia miniata, *Bot. Reg.*, 2,568. In the drawing sent by Mr. Roezl this species has a fine head of bright scarlet flowers, very ventricose, with yellow, protruding anthers.

Hymenocallis (Ismene) viridiflora (Roezl).—Callithauma viridiflorum, *Bot. Mag.*, Vol. 67, 3,866. Has large and beautiful emerald-green flowers on a stalk three feet high.

Hymenocallis (Ismene) Macleana ? — A favourite flower among the Limenas, who, on June 24, hold a festival or gala called Amancaise, something similar to our May Day, when all the inhabitants of Lima hasten to a neighbouring spot where the flowers grow abundantly, and decorate themselves, their horses, and carriages with the fragrant flowers. Described and figured in *Bot. Mag.*, Vol. 65, 3,675, as having large and delightfully fragrant flowers.

Hymenocallis (Ismene) Amançaes.—*Bot. Mag.*, Vol. 20, 1,665, *Paxton Mag.*, 3, p. 267, described as growing two feet high, blossoming in June and July, with three to six flowers, very fragrant, large and of a rich yellow colour; in length about six inches.

Habranthus.—New species, undescribed, but clearly allied from the drawing and dried flowers sent by Mr. Roezl, to Habranthus punctatus, which was collected at Cusco, Peru, 12,000 feet above sea-level; this species is described by Mr. Roezl as having fine blood-red flowers.

Amaryllideae sp. (Roezl).—Sent over with drawing, and described as having large, orange flowers, sometimes yellow, five to six inches in diameter; he speaks of it as almost a true Amaryllis. From the description and sketch Mr. Baker considers this to be the Habranthus fulgens, figured in *Bot. Mag.*, Vol. 92, t. 5,563; a truly magnificent plant, with flowers four to five inches across, of a bright scarlet colour, with yellow, basal, triangular streaks, showing through externally. Roezl says it is impossible to render in a drawing the brilliancy of colouring of this fine flower.

Cyclobothra lutea. — From Mexico, a golden-yellow, bell-shaped flower, differing from C. pulchella in that it expands widely, showing an interior delicately pencilled with markings produced by fine, hair-like processes. A free bloomer, producing six to twelve flowers on each stem. Quite hardy.

Milla biflora.—From Mexico; a very beautiful plant with milk-white flowers, produced in pairs in a wild state, but in umbels when cultivated. The flowers are large, deliciously fragrant, and of such a snowy whiteness as to attract the attention of visitors at the summer Horticultural Fête at the Chiswick Gardens, in 1841, very few passing without enquiring the name of that beautiful flower. A native of the mountainous parts of Mexico; quite hardy.

Childanthus fragrans major.—From Bolivia, with yellow, fragrant flowers, twice as large as those of the old type, and twice as beautiful.

The descriptions may interest many of your readers, as it is quite possible that Mr. Clarence Elliott will be sending home bulbs of these species. The Habranthus species, I believe, was Habranthus fulgens, described in the above notes as Amaryllideae species. The plate of this in the *Bot. Mag.* shows a far larger-flowering plant than that which we now grow as Habranthus pratensis, although I believe Mr. Roezl sent home both forms. I find in old lists several other plants received from him from time to time, and on further reading in a catalogue published in 1873, I found the following. "Lilium puberulum or Leichtlinii collected by Roezl, allied to pardalinum," "Lilium Humboldtii, from Roezl, first offered," and "Lilium parvum, from Roezl," described as very rare.

Among other interesting plants which to-day are rather rare in cultivation, I find Cypripedium japonicum was offered about the same time. This used to be exported freely from Japan in my younger days, and generally arrived in splendid condition, but now I believe it is very rare, even in its own habitat. We flowered it for many years at Colchester. Mr. Kramer used to send my father many rare plants and bulbs, and he wrote that he discovered a Bamboo wood which was full of this Orchid. He found that it grew best in moist Bamboo groves, in leaf-mould, where its roots could find their way, however deep, into yellow loam. My father had the honour of flowering this for the first time in Europe. The true Lilium Martagon dalmaticum (or the Black Lily, as it is called) was then being offered for the first time, also Iris iberica, which used to come to us from the late Dr. Regel. In my early days this was grown in light, black soil like any other Iris, without any particular attention.

Freesia refracta alba and F. Leichtlinii were then coming from the Cape for the first time. I know also that Lilium nepalense was received from India in 1876, the description being: "the flowers are funnel-shaped, whitish-yellow, more or less tinged with purple on the inside, and often marked with scattered dots." I strongly suspect that this particular L. nepalense is the same plant that in subsequent years has come to us from Burma. I found it a very interesting task to look through these old catalogues and discover what a great variety of uncommon plants was offered in those days, some of which are almost unobtainable now. Among Lilies I found also offered (in addition to L. nepalense) Lilium albanum (allied to pyrenaicum), L. polyphyllum (from the Himalayas), the true L. Wallichianum from the Himalayas, and L. Leichtlinii, now practically out of cultivation; also the very fine form of L. elegans that was called Wilsoni or pardinum, a very remarkable Lily, and L. pulchellum from the East. I have an old painting of the latter from a plant that flowered in 1878, showing it as an upright growing Lily with six to eight ascending flowers.

In conclusion, I hope that Mr. Elliott may be successful in finding many of these out-of-the-way plants which our forefathers used to grow, and so reintroduce them for the benefit of present cultivators. *R. W. Wallace, Tunbridge Wells.*

A REVISION OF VIOLAS.

(*Continued from* Vol. LXXXII, p. 244).

Viola Novae-Angliae, House, has large, violet-purple flowers, on stems of four or five inches. The spring leaves are narrowly triangular, as Farrer states, but the summer leaves are as broad as long—one of very numerous examples of spring and summer differences in Violas which add to the difficulty of determining the species, and have frequently resulted in the description of two species instead of one. V. Novae-Angliae is not confined to the New England States, from which it takes its name, but spreads westwards along the line of the frontier as far as Western Ontario, and reaches its most northerly point in the Isle Royale, in Lake Superior. It frequents the banks of lakes and rivers in sandy or rocky places. The seed capsules are mottled with purple.

V. nummulariaefolia should be V. nummularifolia, Allionii, and though akin to V. cenisia, forms by itself a distinct sub-group differing from both the cenisias and the valderias. The easiest botanical point of distinction lies in the stipules, which in V. nummularifolia are ovate-lanceolate, toothed but not divided, whereas in V. cenisia they are leaf-like, spathulate, and have one or two small, lateral lobes at the base, and in V. valderia are divided into fingers. In this characteristic, V. nummularifolia resembles the true V. rupestris, Schmidt, and Becker has accordingly named the sub-group "pseudo-rupestres." V. nummularifolia frequents only the highest mountains, as Monte Rotondo, Monte d'Oro and Monte Renoso in Corsica; in the Maritime Alps it is entirely restricted to the comparatively small area between Mt. Bego in the east, and Mt. Tinibras in the west, although it is more frequent on the French side of the frontier. It flowers normally from July to September. I have been unable to identify the "Col de Pra" where Farrer saw it in early June. I have twice imported plants, and once seeds, but without result. M. Correvon succeeds with it, but tells me he cannot reproduce the full beauty of the flowers, owing, he thinks, to his inability to obtain completely lime-free soil at Floraire, for V. nummularifolia is never found away from granite. Little need be added to Farrer's description, except that the procumbent shoots may be so much as three-and-a-half inches long, the flowers are carried on rather long, slender stems, and have a yellow eye, with the lowermost petal shorter than the others.

V. Nuttallii, Pursh, has to some extent been confused by Farrer with two false species, V. linguaefolia and V. vallicola, neither of which is distinct from V. Nuttallii, except in that the leaves vary from ovate to longly-lanceolate. It gives its name to a distinguished group which includes besides itself V. pedunculata, V. praemorsa and V. purpurea. It is the most northern of these, but is not confined to the "Northern States," for it extends from Manitoba in the north, to Arizona in the south. The statement that it has "leafy branches" perhaps gives a wrong impression, as, like the others of its group, it is nearly stemless in spring when the petalliferous flowers appear, whereas in summer the stems lengthen and become leafy and bear cleistogamous flowers in the axils. It is a plant of the prairies and the banks of rivers, but also (as in Montana) ascends to 4,000 feet in the hills.

V. ocellata, Torrey and Gray, the "two-eyed Violet," takes its name from the violet spot at the base of each of the two lateral petals which are otherwise yellow or whitish, the lower petal having the same ground with violet striations, and the two upper petals dark purple. With V. canadensis and V. rugulosa, it forms the canadensis group. It is not confined to California but extends from Oregon southwards, and is particularly plentiful just north of the Golden Gate. Some at least of the half-dozen plants which I imported and distributed are making headway.

V. odontocalycina, Boissier, is now ranked as a sub-species of V. Grisebachiana, Visiani. This belongs to the cenisia fraternity and, if anything is, it, and not V. minuta, is the real connecting link between V. cenisia and V. alpina. So much so, indeed, that when Becker described it (after Visiani) in 1907, he ranked it as a subspecies of the collective group of V. alpina. The type plant is found on the peak of the Suva Planina, near Nish in Serbia, and on Mt. Ljubatrin, where it is very abundant among the highest limestone rocks. The sub-species, V. odontocalycina, was originally reported to be native to Armenia, but Monbret who visited Armenia in 1833, refers to the "Armenian Olympus" as "Keschish Dagh," which is also the name of the Bythinian Olympus and it is thus surmised that V. odontocalycina hails not from Armenia at all, but from the famous Mt. Olympus, near Brussa, which is also the home of V. gracilis and V. olympica. The type plant, V. Grisebachiana, is very dwarf, nearly stemless, with roundly ovate leaves barely crenate and suddenly contracted; the sub-species differs by being softly velvety, by the leaves and stipules being plicate, the spur being thick and obtuse, and the leaves gradually narrowing into the petiole. It forms a close, crowded tuft, much like V. alpina, from which it differs mainly by the possession of a stem, at least in embryo, and by the stipules being entire instead of bifid, and not adnate as in V. alpina.

V. odontophora is synonymous with V. adunca.

V. odorata, L., needs no description or praise. The variety sulphurea (syn. V. Vilmoriniana, which should be V. Vilmorini, Delac et Motte), which Farrer singles out for commendation, appears to be more restrained than the type, far from being "lushly and largely leafy." I cannot see any difference between this and the pinkish Sweet Violets which are now advertised under garden names. There are several natural varieties of the Sweet Violet which deserve introduction into gardens, *e.g.*, var. alba, white with the spur more or less violet, which is to be distinguished from V. alba of Besser; var. subcarnea, Parlatore, with red flowers, white towards the base of the petals—a very attractive Violet; var. sordida, Zwanziger, dull purple-violet; var. sulfurea, Rouy et Foucauld, which is the form mentioned by Farrer, and which I find has a particularly attractive apricot-coloured form with violet spur; var. lilacina, Wiesberg, with lilac flowers; and var. variegata, D.C., with blossoms of mixed hues.

V. olympica is synonymous with V. gracilis. Both come from the Bythinian Olympus, the former at a lower altitude than the latter. It has nothing to do with V. tricolor or V. rothomagensis, and the description by Farrer is one of an entirely different plant. There is in cultivation a very attractive tricolor Viola under the name of V. olympica, which may be the form that was in Farrer's mind, but is quite distinct from the true V. olympica of Mt. Olympus.

V. orphanidis, Boissier, from Macedonia and northern Greece, needs no further mention, except that the blossoms sometimes have the lowermost petal yellow—an attribute which Farrer gave to V. orthoceras, its kinsman from Armenia. This species was described as V. prolixa from Montenegro by Pancic.

V. orthoceras, Ledebourg, has, "blooms twice the size" of V. cornuta, and stems twice the length. The flowers are violet, not yellow and purple. I obtained seeds of this species from the enterprising Botanic Gardens at Tiflis, in the Caucasus, and it has done well, as has also V. orphanidis, of which I obtained a plant from Edinburgh.

V. pallens (Banks), Brainerd, was for long mistaken for V. blanda, Willdenow. It belongs to more northern latitudes or higher altitudes than V. blanda, coming from Labrador, Newfoundland, Quebec, the higher mountain peaks of the eastern ranges, and from Vancouver along the Rockies to Colorado. V. blanda is, on the contrary, a species of the south, so far as Georgia. The former is much more hardy than the latter. Easy means of distinction are the pinkish tinge in the peduncle, petiole and midrib of V. blanda, the minute white hairs on the upper surface of the leaves, the rounded rather than acute leaves, the beardless lateral petals, the long narrow and strongly reflexed upper petals, the dark-green, ovoid capsules, and the dark brown seeds. In V. pallens, on the other hand, the peduncles and petioles are dotted with red in summer, the leaves are glabrous on both surfaces and somewhat acute at the apex, the lateral petals are bearded, the upper petals are broadly obovate, the capsules are green and cylindric, and the seeds almost black. In examining the seeds it is, of course, necessary to make sure that these are ripe. I have been furnished with true plants of V. blanda from an English nursery, which, unfortunately, failed with me; and I have also been furnished with seeds which were almost certainly seeds of V. pallens, but these also came to nothing. In nature, V. pallens lives in boggy, springy ground, especially along brooks; while V. blanda frequents rich humus in shade among woods. *E. Enever Todd, Lt.-Col.*

(*To be continued*).

MESEMBRYANTHEMUM.

(*Continued from p.* 14.)

12.—GLOTTIPHYLLUM, HAW.

26. G. Neilii, N. E. Br. (Fig. 34).—Stemless, each native-grown plant consisting of only one or two very short growths about an inch in height and 1½–2 inches across the full spread of the leaves. Growths more or less depressed towards the ground. Leaves under natural conditions in 1–2 pairs, or under cultivation 3 pairs to a growth, two-ranked or with the pairs placed somewhat obliquely to each other; on native-grown plants ¾–1¾ inch long, 9–18 lines broad, and 4–7 lines thick, becoming under cultivation up to 2½ inches long, 18 lines broad and 6–8 lines thick, varying from somewhat square to oblong or obliquely oblong-ovate, subtruncate or broadly rounded at the apex, sometimes one leaf of a pair has a very short acute point at the apex of the upper margin, flat or slightly convex on the face, with a transverse keel near the apex on one leaf of a pair, ormed by pressure against the shorter opposing leaf, convex, or with a very oblique longitudinal obtuse keel on the back; at first the leaves are microscopically ciliate on the margins and keel, but with age this ciliation disappears; substance soft and fleshy; surface smooth, glabrous, chalky-green and more or less suffused with rosy and purple when fully exposed to the sun; native grown plants when received had the very young leaves and the flat face and basal part of the back of the older leaves of a pinkish or light purplish tint blending into the greyish-green or glaucous-green of the apical part, not dotted. Flowers sessile. Calyx unequally 4-lobed, glabrous; lobes 4–6 lines long and 4–5 lines broad, or perhaps larger (only one dried flower seen), the inner pair with broad, membranous margins. Corolla apparently 2¼–2½ inches in diameter; petals in about 2 series, an inch or more long, ½–⅔ line broad, as seen dried, linear, obtuse, yellow. Stamens 2 lines long, apparently of a paler yellow than the petals; filaments not bearded. Stigmas 7–8, about 1 line long, plumose, yellow. Ovary convex on the top, 7-8-celled. Capsule sessile, about half-an-inch in diameter when closed, with 7–8 valves and cells; valves reflexed when expanded, about 3 lines long and 2 lines broad, deltoid, dark grey (perhaps from age) with their expanding keels ½–¾ line apart at the base, stout, obtusely rounded along the top and ending in an awn, much shorter than the valves, without marginal wings, dark brown; cells roofed with somewhat stiff, dark brown cell-wings, and the opening nearly closed by a large pale brown tubercle. Seeds ½-line in diameter, compressed, roundish in outline, with a small nipple, minutely tuberculate, dark opaque grey-brown.

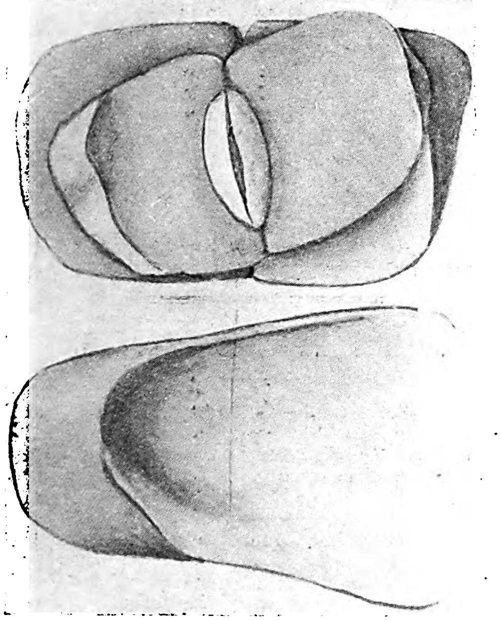

FIG. 34.—GLOTTIPHYLLUM NEILII.
Entire growth as received, and a leaf from a similar plant after one year's cultivation; both natural size. Flowers sessile.

Prince Albert Division: Karoo, near Prince Albert, growing among stones of its own colour, Neil van der Bijl!

This very distinct species was first sent to me by Mr. N. S. Pillans and afterwards by Mrs. D. van der Bijl, who informed me that it was discovered as above recorded by her son, Master Neil van der Bijl, after whom I have much pleasure in naming this remarkable species, which I understand is not particularly easy to find, its form and colouration being so very different from the usual long grass-green leaves we are accustomed to see in other species of this genus. I am also indebted to Mrs. van der Bijl for a dried flower of it, from which the above description is made, for neither of my two plants have flowered, probably owing to want of sun last year.

This is remarkably distinct from all other species of this genus at present known, and can be instantly recognised by its short broad leaves and their peculiar opaque, chalky-green or greyish-green ground colour in summer, tinted with pinkish or purplish. The colouration of plants fully exposed to the sun or native-grown plants is quite pleasing and very different from that of all its allies. In the winter, under my sunless conditions, the leaves become green.

Fig. 34 represents an entire plant as received from South Africa, and a leaf from another plant after it had been in cultivation a year, both of natural size. It has the appearance of being a species that increases very slowly.

27. G. ochraceum, N. E. Br., in *The Gardeners' Chronicle*, 1922, Vol. LXXI, p. 22.—Stems forming a matted mass, prostrate, 2-edged, with internodes up to one inch long, purple, finally whitish, and branches with tufts of a few pairs of leaves at their ends. Leaves opposite, spreading, usually 1¼–2½ but sometimes (according to Berger) 3–4 inches long, 2–3 lines broad and 2–2½ lines thick, flat above, with subacute edges, obliquely keeled throughout on the back, with one side convex and the other flat or slightly concave, acute or obtusely pointed, soft and flexible, pulpy, smooth, glabrous, green, slightly shining, obscurely pellucid-dotted when viewed with a lens against the light. Flower solitary. Pedicels usually 1¾–2½ (but according to Berger sometimes 3–4) inches long, slightly compressed and 1½ line broad and 1 line thick, glabrous, light green. Calyx very unequally 5-lobed down to its union with the ovary, which is shortly obovoid, slightly compressed and 3½ lines in its broader diameter; the two longer lobes 8–10 lines long, leaf-like, longer than the petals; the three shorter lobes 2½–3½ lines long, with broad, membranous margins, acute. Corolla about 1¼ inch in diameter, expanding in sunshine in the morning, closing in the afternoon; petals 50-60, in about 2 series, free, 6–7 lines long and ½–1 line broad, cuneately linear, obtuse, of a peculiar buff or ochraceous colour, with a faint coppery tint. No staminodes. Stamens numerous, erect, about 2 lines long; filaments white; anthers yellow. Stigmas 7–10, about 1½ line long, plumose, acute. Ovary flattish on the top, 7–10-celled. Fruit not seen.

Mesembryanthemum ochraceum, Berger, *Mes. und. Port.*, p. 234 (1908).

South Africa: Locality and collector unknown.

My first description of this plant was copied from that of Berger, but the above is made from the living plant, which I find is cultivated in several gardens in England, under the name of "Mesembryanthemum humile," as quoted by Berger. I have not seen any plant of it with leaves and pedicels so long as Berger describes them to be, nor do I find the stigmas to be 5 as he states. This plant appears to be infertile to its own pollen, at least, I have as yet failed to obtain fruit of it, and until that is obtained and examined the correct genus to which this plant belongs cannot be determined, for I doubt if it is really a species of Glottiphyllum.

DOUBTFUL SPECIES.

Mesembryanthemum heterophyllum, Haw, *Obs.*, Append., p. 420 (1795), *Misc. Nat.*, p. 36, *Syn. Pl. Succ.*, p. 225 and *Rev. Pl. Succ.*, p. 101, and N. E. Br. in *The Gardeners' Chronicle*, 1922, Vol. LXXI, p. 22, not of Andrews.—Of this plant I know nothing, and can here only repeat what I have stated at the place above quoted, viz.: This is quite an unknown plant whose position is doubtful. It most certainly is not at all the same as M. angustum var. heterophyllum, Haw., with which it has been confused by Sonder and Berger. It is originally described by Haworth as follows: "I have seen a fine stemless Mesembryanthemum with various shaped greenish impunctate leaves, the lower ones somewhat like those of my canum, the upper or inner ones somewhat like those of difforme, but not quite so large." In his *Misc. Nat.*, p. 38, he adds: "I once saw two plants of this fine species alive in the collection of Messrs. Malcolm, nurserymen at Kennington." As he gives no further information about it in any of his works and no drawing is known to exist of it, the above is all that is known concerning this plant. Although associated with species of Glottiphyllum by Haworth, I am doubtful if it belongs to this genus. It may have been an immature plant of some other known species of this or another genus, for in a young state some members of this group are very different from their adult form.

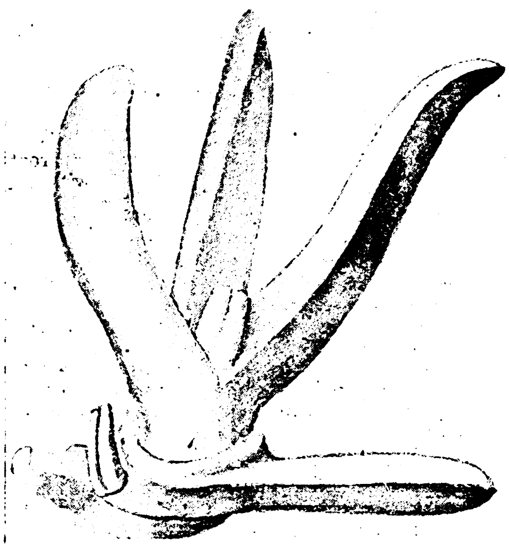

FIG. 35.—GLOTTIPHYLLUM SURRECTUM, HAW.
Natural size; from a drawing of the type plant.

Mesembryanthemum surrectum, Haw., *Rev. Pl. Succ.*, p. 101 (1821) (Fig. 35).—Leaves decussate, suberect or spreading, semiterete-subulate, acute, soft, usually pustulate at the base. Ovary exserted, subpedunculate.—Berger, *Mes. und Port.*, p. 236.

Var. B. Leaves shorter, more spreading.

The above is Haworth's description of this plant, which he states was in Kew Gardens in 1819, and is all that has hitherto been known of it. At Kew, however, there is a drawing of the type plant (of which Fig. 35 is a copy), labelled: "Raised in the year 1817 from seeds collected at the Cape of Good Hope by Mr. Bowie." From this drawing I glean the following particulars. Leaves opposite, united at the base and the pairs crossing one another at right-angles, 2–2½ inches long, about 5 lines broad, except at the base, where they are dilated, and 4–5 lines thick, semicylindric, flat on the face, with sharp edges, very rounded on the back, tapering above the middle to an obtuse or subacute apex, green and apparently glabrous and shining, not dotted.

This plant does not appear to belong to the genus Glottiphyllum, and it is hoped that by means of Fig. 35, which is copied from the drawing of the type, it may be rediscovered. *N. E. Brown.*

(*To be continued*).

VEGETABLE GARDEN.

THE USES OF CHICORY.

It is strange that the value of this plant is so little recognised in this country, for its wholesomeness as a food plant is beyond question, its value as a raw salad and boiled vegetable being well established, and its culture unusually easy. As a winter salad it is invaluable, and its production is easy, even to those who have no frame or greenhouse accommodation. Even when frames or houses are available for the production of winter salads, losses amongst Lettuces and Endive are apt to occur from various causes, with annoying frequency, whereas it would appear to be almost impossible not to produce good heads of Chicory under the most simple conditions.

For general purposes the variety Witloof, which had its origin in Belgium and is really a form of the old, large-rooted Magdeburg Chicory, is probably the best, but there are several varieties worth growing. The great merit of this variety is the width of its leaves and the substance of their ribs; when well-grown they produce large heads of considerable weight, resembling blanched heads of a Cos Lettuce.

Not only does Chicory make an excellent winter salad, but also a good vegetable dish when boiled; it is largely used as such on the Continent.

It is unfortunate that its cultivation is more or less confined to the larger gardens in this country, for its ease of culture should appeal to the cottager and allotment holder. From seeds sown at the end of May in drills one foot apart, the plants being thinned to six or eight inches apart, good roots may be produced fit for lifting in November. These may be used immediately for the production of the winter crop, and if no house or frame accommodation is available, a dozen roots may be planted firmly in a small box, with a similar box inverted on it for blanching the leaves, and growth will commence quite freely even in an ordinary living room. The first crop is naturally the best, but after this has been cut a secondary crop of weaker, but quite serviceable leaves, is developed. *W. A.*

FORCING ASPARAGUS.

Asparagus is a delicious vegetable, with a natural season of supply all too short, and although it may be difficult for those with limited resources to produce it by forcing from Christmas onwards, it is comparatively easy, even for those with meagre facilities for the forcing of vegetables, to produce occasional dishes from early March onwards. Roots lifted carefully now, and put into moderate heat, will grow quickly and ensure a supply of succulent heads for several weeks before the outdoor supply is available.

For very early crops, a pit heated with hot-water pipes is necessary, but for later supplies quite good results may be obtained by making hot-beds in frames of sufficient depth. If hot-beds are made with a mixture of long manure and leaves and thoroughly compacted, they generate a steady and lasting heat which is much more suitable to the growth of Asparagus than the more arid heat from hot-water pipes. Sufficient head-room should be left in the frame for the development of the growths, allowing for covering the hot-bed with six inches of soil on which to lay the roots, three or four inches of soil to cover them, and at least six inches clear space for the development of the heads. Very little ventilation will be necessary in dull weather, but a cover over the lights during the night is a great aid to the conservation of heat, and should be used regularly.

Where frame accommodation is not available, roots may be placed on the floor underneath the stages in a greenhouse, or intermediate house, and covered with soil; though the growths under these conditions may not be quite so fleshy, they are very serviceable.

An additional dish of a green vegetable is always appreciated during the early spring months, and nothing can be better to supplement the usual supply than occasional dishes of Asparagus. Once a routine has been initiated for this purpose it is very simple, for by sowing a row of seeds every year at one end of the bed, and lifting a row from the other end, the supply of roots is assured and the main bed kept permanently young. *A. P. C.*

LEEKS.

To obtain good specimens of this useful vegetable a long season of growth is necessary, therefore seeds should be sown during January. Well-drained pans or boxes are the best receptacles, and a finely sifted, friable soil should be used to sow the seeds in. Make the soil fairly firm, sow the seeds thinly, and cover lightly; afterwards firming with a stout piece of wood and watering with a fine-rosed can. If the seeds are placed in a moist house with a temperature of not less than 60°, they will soon germinate. So soon as they are through the soil, place the boxes or pans on a shelf close to the roof-glass, to keep the young plants sturdy.

Some growers prefer to sow two or three seeds in a small pot, thinning the seedlings to one in each. This is an excellent plan if the plants are required for early use or for exhibition, as the plants may be planted out or potted on with a minimum of root disturbance.

When the young plants in the seed-pans are large enough to handle, they may be carefully pricked out into boxes about fifteen inches long, twelve inches wide, and three or four inches deep. These should be carefully drained, the crocks being covered with a layer of leaves or rough turf. The soil that has done duty for Chrysanthemums, if sifted through a half-inch sieve and mixed with some good loam, will make an excellent compost.

The boxes should be filled and the soil pressed firmly, the young plants being pricked out, about two inches apart, taking care not to break the roots or bury the plants. Water them in with water at the same temperature as the house, and place them in a warm vinery or Peach house, quite near the glass. Do not over-water them, but on bright days give them a syringing overhead. Nothing more will be required for a time beyond occasionally stirring the surface of the soil with a pointed stick to keep it open.

Attention may now be directed to their quarters outside. Select a firm piece of ground in an open, sunny position, and make trenches about fifteen inches wide and the same depth, if single rows are desired; if double rows are needed, the trenches should be six inches wider. Place the soil on each side, then fork in a good dressing of well decayed farmyard manure, thoroughly mixing it with the soil. Replace the soil until the trench is filled within two inches of the top, then fork along each side to leave a neat and tidy appearance. If more than one row is required, the trenches should be made about four feet apart; this will give plenty of room for subsequent work. About the end of March, or so soon as the weather is favourable, the young plants may be moved to cold frames, keeping them fairly close for a few days to prevent checking their growth. On warm days plenty of air should be admitted, and the frames covered at night if there are signs of frost; after a time, the lights may be removed on warm days, as the sturdier the plants are, the better will they transplant. In the meantime the trenches should be given a light dressing of bone-meal and soot, which should be forked in.

The plants should be ready for putting out about the end of April. Rake the trenches over with an iron-toothed rake, and make the soil firm with the back of the same tool, but do not tread it, a short piece of board being used for the worker to stand on. The plants should be carefully lifted with a trowel and planted about one foot apart, leaving the surface neat and level as the work proceeds. When finished, damp the plants overhead with a rosed-can, and, if the weather is warm, give them a good watering a day or two later.

To obtain fine specimens of Leeks, such as are seen at our leading shows, requires care and attention in blanching; the best method is to place a tin, or stout paper collar around each one. The collars should be about ten inches or a foot deep, and be placed in position soon after the Leeks are planted, the idea being to draw the plants up before they become firm. The old method was to give successional bankings-up of the soil, in much the same manner as applied to Celery; very good Leeks may be grown thus.

A much better method is to place some nine-inch boards edgeways along each side of the trench, supporting them with stout stakes driven in at intervals; if these are placed in pairs, one on each side of the board, and are about eighteen inches high, more boards may be dropped in between to form a deep trough. As the plants grow, the collars may be lifted a few inches and some fine soil placed around the base. Keep on lifting the collars as growth proceeds, placing more soil inside the boards until the required length of blanching is reached; fifteen or eighteen inches will be quite enough; the plants, of course, will continue to thicken; The advantage of this system is that the plants can be fed. A shallow depression outside the boards should be made sloping towards them, into which diluted liquid-manure may be poured. It is obvious that feeding is much more difficult if the plants are earthed up in the old manner. If the summer proves hot and dry Leeks will be greatly benefited by being syringed or damped overhead every afternoon.

When the final earthing-up is completed, some clean straw should be laid between the boards to prevent rain from washing the soil into the leaves of the plants. When lifting the Leeks for use, the soil should be carefully removed and the plants taken up with their roots intact. Before lifting, tie the foliage round with a piece of broad raffia to prevent splitting. *R. W. Thatcher, Carlton Park Gardens, Market Harborough.*

PUBLIC PARKS AND GARDENS.

The Worcestershire County Council has given its approval to the purchase and laying-out of land at Broadway for a recreation ground. The purchase price was £600 and the work will cost £240.

Keighley Parks Committee recommends the Town Council to make application for sanction to borrow £1,850 for the purchase of land at Low Utley, together with the farm building thereon, known as Croft House Farm, for a recreation ground.

Armley House Estate, Gott's Park, has been acquired by the Trustees of Wade's Charity, who will lease the property to the Leeds Corporation for 999 years at a peppercorn rent, for a public park. The purchase price was £12,500.

The East and West Molesey Urban District Council has agreed to negotiate for the purchase of land at the corner of Walton and New Roads, West Molesey, for a recreation ground.

The Board of Trustees of the National Police Fund has made a grant of £1,000 to the Sheffield City Police towards the purchase and equipment of a recreation ground.

Leicester Corporation has approved a scheme submitted by the Parks and Recreation Grounds Committee, for linking up Leicester Abbey grounds and Abbey Park, by the construction of a bridge over the River Soar. The Abbey is to be renovated and the grounds laid out for various sports and recreations.

Darlington Town Council contemplates the levelling and draining of the Hundens Recreation Ground at an estimated cost of £1,750.

The Urban District Council of Wellingborough has made application to borrow money for laying out the "Spotted Piece" allotments for a recreation ground.

HOME CORRESPONDENCE.

Mulching Roses.—In the article connected with this subject in *The Gardeners' Chronicle* of January 7 (p. 16), Mr. Stead invites readers to expound their views. Personally, I prefer to fork the manure in during March; I am averse to the autumn manuring of Roses. In autumn the Roses are settling into their dormant period and do not require the manure; therefore the food is washed through the soil beyond the roots which absorb it. Also, if there is a mild autumn the manure encourages soft growth, which is easily destroyed by frost. It keeps the soil wet and prevents air from penetrating to the roots, thus encouraging sourness and stagnant moisture. Some growers state their reason for autumn mulching is to protect the Roses; the only parts protected are the roots, generally those of the common Briar, which grows wild in this country and needs no protection. No doubt the beds would benefit by forking in the manure in autumn, but I prefer to leave the manuring until March, thus giving the plant seven or eight months in which to make full use of it. *Gavin Brown, Craigo House Gardens, Montrose.*

Birds and Fruit.—As I have been interested in the correspondence on the destruction of fruits by birds, I venture to offer a remedy for preventing damage to Pears by tits. A tit will make a small hole near the stem of the Pear fruit, and having done so passes on to another fruit and does likewise. I used Carnation collars nearly thirty years ago for the first time and found them of considerable value as preventives, but the centres were too large and the collars not stiff enough, so I made my own out of any stiff card or cardboard. They are made very simply; cut circles of cardboard three inches in diameter and in the centre make a hole about three-eighths-of-an-inch in diameter, or a little more; then make one straight cut from the circumference to the centre hole to enable one to fix the collar on the stem of the Pear. When the fruits are gathered, any collars that remain in good condition may be stored for the next season. They are cheap, easily and rapidly applied, and effectual, and they do not obstruct sun and air in the way that bags do. *F. W. Price, Beckenham, Kent.*

——As one particularly interested in our feathered friends, allow me a brief note on my experience of the little Tom Tit (Parus coeruleus) who, I admit, when Pears are ripe will have "his bit." I was much amused early last spring watching the doings of a pair of these cheeky birds on a standard Bramley's Seedling Apple tree in my little town garden, which, in spite of previous endeavours to clear it of American Blight, had, apparently, sufficient left for them to enjoy hunting for it at intervals over a week. Then the tits disappeared. Later on, to my surprise, they reappeared with a whole family of little tits, apparently but just enjoying their first experience of the outer world, as they seemed still dependent on the parents to fill their hungry maws, which the said parents were endeavouring to do in researching for the woolly aphis, since when the latter has been non-existent. I am, and have been, even more interested in the doings of house sparrows (Passer domesticus), as they are always with us, and of them I could a tale unfold, but that's another story. *E. K., Dublin.*

——Since Mr. Greatorex has entirely misread my letter and failed to comprehend my attitude towards birds and food growers, may I be permitted to emphasise what I thought had been put plainly enough, viz., that it is because there are food crops other than Pears (and certainly of more general and economic value than Doyenné du Comice Pears) over which the community in general has a claim, I hold tits and other insect-eaters essential. We are all concerned with "getting a living," and I care not whether it is Pears or Potatos, there is abundant evidence to show that insectivorous birds have their place in nature, and that we should very soon learn the measure of their services were they seriously reduced I have not the slightest doubt. I thought that I had put it clearly enough to indicate that my views are not the views of a "crank" of the "bird-lover" description. What I do insist upon is that we all have a stake in the "fruits of the earth," in the most comprehensive sense of that phrase, and that a balanced, tolerant attitude towards all sides must be maintained. It is because such an attitude has not been observed that bird protection by law became necessary. But I am ready to admit that there are cases in which legalised bird protection might be relaxed—and it already has been. The starling, in some counties, offers an instance. Both the rook and the pigeon are also often too plentiful. But I fear that Mr. Chapman (p. 15) will convince very few that the loafing gunner and "predatory small boy" are "part of the well-ordered system of nature!" Such an assumption is almost comic. Apply that view to what we know of the plover, whose services, always so entirely beneficial in the prevention of liver-fluke in sheep, are common knowledge, and one wonders whether Mr. Chapman intends us to take him seriously. *A. T. Johnson.*

Pittosporum undulatum.—This distinct Australian evergreen is already in flower in a cool house here. Although only seen at its best in the milder parts of Great Britain, this shrub thrives in less favoured localities if given the protection of a wall, in which position it usually starts flowering about the middle of May. The flowers, from one-half- to three-quarters-of-an-inch across, are of a creamy-white colour, borne in terminal clusters of umbels two inches to two-and-a-half inches in diameter. The pleasant fragrance from the flowers is somewhat reminiscent of a Daphne. Pittosporums are best planted in a light, loamy compost. Sturdy, young specimens in pots are more suitable for transplanting than plants from the open ground. *Thos. Bythe, Botanic Garden, Cambridge.*

Viola Howellii.—A contributor in a recent issue described, under the above name (Vol. LXXXII, p. 503), a Viola which makes a small plant, has reniform leaves of a refreshing shade of green, and has small flowers of a clear yellow. This, however, cannot be the true V. Howellii, which is a rather large plant (stems and leaf-petioles from five to ten inches long, and flower stems so long as the leaves), with violet flowers which are rather large. V. Howellii is an extremely rare plant, even in nature. It frequents the Pacific coast from Oregon northwards to Vancouver Island (*e.g.*, Lake Shawnigan). Your contributor states that this Viola comes from "North-west America"—a term often used but not very explicit. Generally, however, the term means Oregon, Washington and Southern British Columbia. In this area there are found three species with yellow flowers and reniform or nearly reniform leaves, viz., V. orbiculata, Geyer, a rear and beautiful species; V. sarmentosa, Dougl. (syn. V. sempervirens, Greene); and V. glabella, Nuttall. The last-named has been in cultivation in England. Probably your contributor's Viola is one of these. *E. E. T.*

Shortage of Rushes for Chairs.—If the makers of chair-seats, baskets and mats are dependent upon Juncus conglomeratus for their industry it would be useless to search for any quantity of it in Surrey (see Vol. LXXXII, p. 517). Of the ten species that occur in Surrey, the species above-named is the rarest. In the course of forty-four years, I have gathered it only twice. A few years ago I set myself the task of finding it, and although the search was carried on for months, I found only one small colony. I have always been under the impression that J. inflexus (glaucus) was the toughest-stemmed Rush, and it is thinner than either J. conglomeratus or J. effusus. The last-named very often imitates J. conglomeratus in dry situations and hard soils by having its flowers and fruits in very compact heads, but lacks the botanical characters which indicate J. conglomeratus. Some farmers make very tough ropes from J. articulatus, and J. sylvaticus is used for tying the thatch on their stacks; so there are three tough Rushes, that would prove as strong as J. conglomeratus. *J. Fraser.*

SOCIETIES.

ROYAL HORTICULTURAL.

JANUARY 17.—There was a decidedly larger show at the second meeting of this Society at Vincent Square than was the case a fortnight ago. There were several attractive collections of Orchids, and the Committee recommended three Awards of Merit to novelties. The chief subjects before the Floral Committee were greenhouse Primulas, Cyclamens, Carnations, hardy shrubs and a few early alpines. The Committee recommended three Awards of Merit to novelties. The exhibits before the Fruit and Vegetable Committee were collections of Apples, saladings, a few Smooth Cayenne Pines in pots, and a new Apple, which received an Award of Merit. There were the usual exhibits of garden pictures and sundries.

Orchid Committee.

Present: Mr. Fred J. Hanbury (in the chair), Mr. Gurney Wilson (Hon. Secretary), Mr. C. J. Lucas, Mr. Lionel de Rothschild, Mr. S. Low, Mr. Clive Cookson, Mr. A. Dye, Mr. F. K. Sander, Mr. J. Shill, Mr. T. Armstrong, Mr. Charles H. Curtis, Mr. R. Paterson, Mr. J. Cowan and Mr. A. McBean.

AWARDS OF MERIT.

Cypripedium Bedouin var. aureum (*Lord Wolmer × Swallow*).—A charming, well-balanced flower and of a pleasing colour. The white dorsal sepal is stained with green at the base and heavily lined and spotted with purple; the sepals and lip are yellowish green, but the former are dotted with purple-brown and have a median line of similar colour. Shown by F. J. HANBURY, Esq. (gr. Mr. Farnes), Brockhurst, East Grinstead.

Odontonia Amoena (*Oda. Baroness Schroder × Odm. St. James*).—A beautiful Orchid with large flowers carried on an Odontoglossum-like spike. The flowers are flattish, purplish-rose, with deeper, redder markings over the lower half of each sepal and petal. The lip is slightly paler, but has brighter red-brown markings around the orange-coloured disk. Shown by Messrs. CHARLESWORTH AND Co.

Odontoglossum Toreador var. Ursula (*O. Laurentia × O. crispum Livada*).—A pretty variety in which the white petals are tinged with blush and marked with deep reddish rose; the sepals are tinted with pink and have rosy-pink blotches and spots; lip white, marked with dark red. Shown by F. J. HANBURY, Esq.

GROUPS.

An interesting display was made by S. G. BROWN, Esq. (gr. Mr. F. W. Thurgood), Brownlands, Shepperton. This included Oncidium splendidum, O. Cavendishianum, Odontoglossum Penelope, Brownlands var., Zygopelatum Mackayi, Maxillaria Huebschii, Lycaste Gratrixae, Calanthe Angela, Vanda Amesiana, Chondrorhyncha Chestertoni with its wonderfully fringed lip, and Cypripediums in variety.

A large specimen plant of Cymbidium Moira, Mymms Park var., shown by Mrs. W. S. M. BURNS (gr. Mr. G. H. Wright), North Mymms Park, Herts., attracted considerable attention; it carried five huge spikes, one of these carrying twenty-six big flowers. A Cultural Commendation was awarded.

Varieties of Lycaste Skinneri were prominent in the large exhibit from Messrs. SANDERS, but Cymbidiums and Cypripediums were also shown extensively. Cymbidium Erica Sander, C. Edward Marshall, C. Ralph Sander var. Albania, C. Moonlight, C. Albatross and C. Gattonense var. umbrosum were conspicuous, while Odontonia brugensis, Coelogyne occellata and C. Mooreana, Haemaria Dawsoniana, Eria Cooperi (?), with long tassels of small, green and brown flowers, and Angraecum superbum were other interesting subjects.

Messrs. COWAN AND Co. submitted capital examples of Cattleya Woltersiana, the finely coloured Laelio-Cattleya Dodona, Cymbidium Pauwelsii, C. Capella, several plants of the stiffleaved Oncidium Cavendishianum, the rare O. Ceboletta, Masdevallia Schröderiana, Lycaste cruenta, several Odontoglossums and numerous Cypripediums.

A very handsome display was made by Messrs. Charlesworth and Co., who showed a fine lot of Odontoglossums, notably O. crispum, O. Tityus, O. Plinius and O. Doreen. Odontonia amoena was very beautiful, and so were O. Dolce, O. Olga, Miltonia Lycaena and Odontioda Rona var. Vesuvius, of deep crimson-lake colour. Epidendrum Gattonense, Coelogyne Brymeriana, and some fine Cypripediums were also included.

Cattleya Madame Jeanne Doin, Brasso-Cattleya Massangiana and Odontioda Seymouriae were prominent and beautiful in the group shown by Messrs. J. and A. McBean; here also were Cymbidium Albania, C. Schlegelii, C. Gottiana, Odontoglossum Doreen and O. Rosina, all in fine condition. In Messrs. Armstrong and Brown's group we noted Cattleya Enid alba, Odontoglossum Loochristiense, O. Doris, Cypripedium Perseus var. Alpha, C. Prince Albert, C. Hindeanum. Oncidium cheirophorum and Masdevallia Schröderiana.

Messrs. H. G. Alexander, Ltd., sent Cypripedium Baldur, Holford's var., C. Kestril and C. Juliet. Messrs. Sutton Bros. exhibited Laelias, Calanthes and Odontoglossums, and Mr. Harry Dickson showed Cypripediums and Cymbidiums.

Floral Committee.

Present: Section A.—Mr. Henry B. May (in the chair), Mr. J. F. McLeod, Mr. Arthur Turner, Mrs. E. Wightman, Mr. H. J. Jones, Mr. J. M. Bridgeford, Mr. Frank W. Ladds, Mr. Wm. Howe, Mr. R. Findlay, Mr. W. B. Gingell, Major George Churcher, Mr. E. R. Janes, Mr. M. C. Allwood, Mr. A. E. Vasey, Mr. James B. Riding, Mr. Donald Allan, Mr. J. T. West, Mrs. Helen Lindsay Smith, Mr. G. W. Leak, Mr. D. B Crane, Mr. Charles E. Pearson and Mr. W. D. Cartwright, Secretary.

Section B.—Mr. Gerald W. E. Loder (in the chair), Mr. E. A. Bowles, Mr. James Hudson, Mr. G. Reuthe, Mr A. Bedford, Mr. Amos Perry, Mr. Mark Fenwick, Lady Beatrix Stanley, Mr. G. Yeld, Mr. E. H. Wilding, Mr. T. Hay, Mr. L. R. Russell, Mr. F. G. Preston, Sir William Lawrence, Bt., Mr. Charles T. Musgrave, Mr. R. C. Notcutt, Mr. W. B. Cranfield and Mr. N. K. Gould, Secretary.

Awards of Merit

Chimonanthus fragrans var. grandiflorus.—As shown, this shrub did not seem to us to warrant the varietal name, for we have often seen the type with larger and more showy flowers, and they certainly have been more fragrant. In *Trees and Shrubs Hardy in the British Isles*, Mr. W. J. Bean states that the flowers of this variety are a purer yellow and more showy than in the type, but not so strongly fragrant. A description which, except with regard to fragrance, scarcely applies to the shrub under notice. Shown by Sir William Lawrence, Bt., Burford, Dorking.

Chrysanthemum Crimson Conquest.—A medium-sized Japanese variety which, at its best, is exceedingly attractive. The rather flattish flowers have broad, pointed florets of bright crimson colour, lightly tipped, and often margined, with golden-yellow. Shown by Mr. H. Woolman.

Primula sinensis Sutton's Purity.—This is the best white variety amongst what are termed "double" Primulas. While not so fully double as the variety which a few decades ago was grown so largely in our greenhouses, it is sufficiently so to warrant the designation. We understand that a large proportion of plants come true from seeds, so it is a valuable variety. Shown by Messrs. Sutton and Sons.

Groups.

A very attractive collection of Primula sinensis varieties was arranged by Messrs. Sutton and Sons. Many distinct varieties, both of the florists' and the Star types, were placed in large ornamental baskets, lightly festooned with Smilax and set amid greenhouse Ferns and small specimens of Cocos Weddelliana. The plants were all exceedingly well grown and illustrated admirable strains of seed. For the most part the varieties received colour names and showed very desirable, clear shades of colour. The chief Primula sinensis varieties were Reading Blue, Giant Pink, The Duchess, Reading White and Giant Crimson. Amongst the Star varieties we especially noted Coral, Light Blue, Lavender and Vesuvius, the last-named being of intense crimson colour.

On low tabling, near the entrance, Messrs. Blackmore and Langdon set out many excellent plants of the greenhouse Cyclamen. These were growing in relatively small pots and were profusely flowered. The principal varieties were Salmon King, Scarlet King, Salmon Scarlet, Brilliant, of ruby-purple colouring, Bath Beauty, a good salmon, and Giant White.

An artistic group of early spring flowers was arranged by Messrs. James Carter and Co., who employed Prunus triloba fl. pl., Iris tingitana Juliana, I. reticulata, Primula malacoides, var. Princess Mary, and Hyacinthus, with great skill.

In an interesting exhibit of greenhouse flowering shrubs Messrs. Stuart Low and Co. included Camellias, Daphne indica rubra and Acacia Baileyana. Adjoining these plants they displayed greenhouse Carnations; the chief varieties were Queen Mary, Philip Sasoon, Topsy and Eileen Low.

Amongst a good collection of Carnations, Messrs. C. Engelmann, Ltd., included, Arctic, a good new white variety, which, in addition to good form, possesses considerable fragrance. They also showed Maine Sunshine, Laddie, Betty, a good pink, Circe and Katja, two good Fancy varieties. The chief varieties shown by Messrs. Allwood Bros. were Laddie, Wivelsfield Claret, Cattleya Mauve and Maud Allwood. Adjoining the greenhouse Carnations they showed attractive little bowl of several Dianthus Allwoodii varieties. Mr. H. Woolman staged a large quantity of the Chrysanthemum Crimson Conquest, which received an Award of Merit, and the group well illustrated its great decorative value.

While it did not receive recognition from the Floral Committee, the plant of Saurauja macrotricha, shown by Sir John Ramsden, Bt., Bulstrode Park, Bucks., possessed considerable interest. The species was introduced in 1873, and the present plant was raised from seeds collected by Forrest in China. The large, entire leaves have bright red midribs, which show on both sides, giving the plant a certain foliage value. The relatively small white flowers, with rosy-carmine centres, are borne on racemes which are produced at right-angles to the axils of the leaves.

A pretty group of Hamamelis japonica rubra, Skimmia japonica and Christmas Roses was arranged by Messrs. L. R. Russell, Ltd. Messrs. W. Wood and Son displayed small specimens of Cupressus Juniperus, Pinus and other suitable Conifers in a small rock garden, in which they also planted Erica carnea King George V.

In a well-designed sandstone rock garden, Messrs. W. Cutbush and Son planted various hardy shrubs, including Rhododendron praecox, Skimmia japonica and Daphne Mezereum, with several Irises. Mr. F. J. Wood used proportional quantities of Galanthus byzantinus, Pulmonaria rubra and Christmas Roses in his rock garden. The Misses Hopkins also had a small rock garden planted appropriately.

A number of particularly well-grown early spring flowers was set out by Messrs. Barr and Sons. The chief were Galanthus byzantinus, Crocus Imperati, Narcissus cyclamineus, Iris reticulata Cantab, Eranthis hyemalis and several large, profusely-flowered plants of the white Christmas Rose. Messrs. R. Gill and Son showed trusses of such early-flowering Rhododendrons as R. Nobleanum, R. argenteum and R. Cornubia, with Grevillea rosmarinifolia and a quantity of a good strain of St. Brigid Anemones. Mr. John Klinkert filled a corner of the hall with a collection of his well-grown Topiary specimens.

There were many paintings and drawings of flowers and garden scenes by E. A. Bowles, Esq., Miss Winifred Walker and other artists. Mr. Bowles's collection was of considerable botanical and horticultural interest, and included excellent representations of series of Galanthus, Crocus, Montbretias, Iris, Narcissus, and many other garden plants.

As might be expected at this season, there were numerous exhibits of horticultural sundries. Messrs. Wm. Wood and Son staged a large and varied collection of garden tools, insecticides and fungicides, potting materials, garden frames and ornaments. Messrs. Boulton and Paul, Ltd., had representations of their well-known glasshouses and frames, while new types of garden-paving-tiles, in various shades and sizes were exhibited by Messrs. Sand and Shingle and Mr. Noel Thomas.

Insecticides and fertilisers were exhibited by the Jeyes' Sanitary Compounds Co., Ltd., who also showed a soil sterilising powder; Messrs. Murphy and Sons; The Radium Fertilizer Co., and Messrs. Richard Melhuish, Ltd., whose exhibit included various garden tools and sundries.

Other notable exhibits were the Rolcut secateurs, Mr. C. A. Jardine's pruning implements; numerous types of plant labels, all guaranteed of lasting durability by Mr. J. Pinches and other exhibitors; and garden-tubs by Mr. A. J. Clarkson.

Fruit and Vegetable Committee.

Present: Mr. P. C. M. Veitch (in the chair), Mr. A. C. Smith, Mr. G. F. Tinley, Mr. P. D. Tuckett, Mr. A. Bullock, Mr. R. H. Hall, Mr. J. Wilson, Mr. E. Neal, Mr. Edwin Beckett, Mr. H. Markham, Mr. W. H. Divers, Mr. C. G. A. Nix and Mr. A. N. Rawes (Secretary).

Award of Merit.

Apple Highview Pippin.—In appearance, this Apple is not unlike Cockle's Pippin. It is the result of a cross between Sturmer Pippin and Cox's Orange Pippin, and should be a useful addition to the late dessert varieties. It is rather small in size, conical and of golden-yellow colour, mottled with russet. The flesh is white and agreeably flavoured. Shown by Mr. E. Hill, High View, Oatlands Drive, Weybridge.

Groups.

Though not so extensive or containing such a variety as their previous display, Messrs. Sutton and Son's exhibit of vegetables and salads was very creditable for the time of the year. The various items were in good condition and well-staged, and included several uncommon subjects that the average gardener is not acquainted with. Of these there were, notably, the purple-fleshed Congo Potato and the Pink Fir Potato, both suitable for salads; also the large Black Spanish, and Chinese Rose Radishes. There were fine specimens of Sutton's Pride of the Market Cucumber, both Lettuce-leaved and curled-leaved varieties of Endive; Witloof (Brussels) Chicory and an attractive variegated Kale.

The collection of Apples exhibited by Messrs. George Bunyard and Co. was yet another fine demonstration of the manner in which both dessert and culinary Apples will keep in good condition if carefully stored. There were specimens of more than twenty varieties, all firm and well-coloured. The most notable were Golden Noble, Lord Derby, Bramley's Seedling, Mother, Wealthy, Charles Ross and Upton Pine.

An interesting note was struck by L. F. C. Rich, Esq. (gr. Mr. G. H. Tolman), Manor House, Northwood, who staged three well-grown specimens of Smooth Cayenne Pineapples. These had been grown under normal greenhouse conditions, with an average winter temperature of 60°.

GUILDFORD AND DISTRICT ROSE.

This Society, formed in May, 1927, held its first Annual Meeting at Guildford, on Wednesday, January 11.

Mr. William Harvey, the President, presided, and in submitting the Report of the Committee, spoke of the rapid growth of the new Society, which now has 276 members in Guildford and forty-two in the surrounding towns and villages, and new members are coming in rapidly. Included in the membership, or serving on the Committee, are several well-known Rosarians, including a number of Vice-Presidents of the N.R.S., and five or six members of the N.R.S. Council.

The first exhibition, held last September, on an extremely wet day, was, nevertheless, an outstanding success, and also a striking instance of the team spirit that prevails, for out of the 200 members at that time no fewer than 191 staged an exhibit.

Mr. Harvey went on to state that no hobby is so satisfying as that which leads to the production of beauty. The aim of the Society is first to produce better Roses, rather than more Roses, as it is certain the growing of better Roses will create the desire for more. The Society exists to help small growers and enable them to understand the treatment and the habit of the few Roses they have.

The financial statement submitted by Mr. McCracken, the Hon. Secretary, showed a balance of £3 19s. 0d. in hand.

Mr. Wm. Harvey was elected President, Major A. D. G. Shelley Vice-president, Mr. James McCracken Hon. Secretary, and Mr. Norman Nation, Hon. Treasurer. The Committee was elected as follows: Two years: Major C. F. Henley (Farnham), Colonel Laurence (Guildford), Mr. A. Norman (Normandy); Mr. A. C. Turner (Woking), Mr. A. E. Tylecote, (Guildford, and Mr. M. Young (Guildford), one year: Mrs. Auley (Woking), Mr. G. H. Brierley (Guildford), Mr. C. Burgess (Godalming), Mr. J. A. Kirkwood (Sutton Place), Mr. A. G. Scorer (Chilworth), and Mr. A. H. White (Guildford).

Mr. Harvey appealed for special prizes for the next show, which is fixed for June 27, 1928.

Arrangements are in hand for a Lecture to be given in March, by Mr. Courtney Page, Hon. Secretary, N.R.S. The lecture will be illustrated by lantern slides.

PROFESSIONAL GARDENERS'.

The Annual General Meeting of the Professional Gardeners' Association was held at the Victoria Hotel, Leeds, on January 7, when Mr. J. T. McCormack, of Harrogate, presided over a large attendance of gardeners drawn from within a twenty miles radius of Leeds. The Secretary, Mr. G. Reid, of Golland Hall Gardens, Gomersal, read his report of the year's work and of the benefits gardeners had derived from the use of the register in obtaining situations. He stated that fifty-four new members had been elected during the past year, and that the monthly meetings and lectures had been very well attended and enjoyed. The Treasurer, Mr. Robson, of Oxley Hall Gardens, Westwood, Leeds, reported a balance of £7 18s. 0d. on the year's working, and for the Benevolent Fund a balance of £42 2s. 11d.

Both reports were adopted, and Mr. Capp, of Nostell Priory Gardens, Wakefield, moved that all officers be re-elected for 1928. The Secretary was instructed to prepare a new syllabus of lectures.

The Association, which has another branch at Baildon, will hold its annual dinner at the Victoria Hotel, Leeds, on January 28, at 6 p.m.

SALISBURY GARDENERS'.

The lecturer at the fortnightly meeting of the above Society, which took place on January 4, was Mr. A. E. Usher, of Ranston Park Gardens, his subject being "Vegetables for Exhibition."

Mr. Usher, who is a well-known exhibitor of vegetables and Sweet Peas, held the attention of an enthusiastic audience. He literally overflowed with information, laying special emphasis upon the importance of deep digging, and discussing at some length the best manures as aids to the production of exhibition vegetables on certain soils. Not only was he particularly lucid in his remarks concerning the growing of vegetables, but he also imparted a great deal of valuable knowledge in the matter of their preservation and staging for exhibition.

At the close, a very hearty vote of thanks was proposed by Mr. W. Asher, seconded by Mr. A. Wilkins. Mr. Usher, in reply, mentioned that it was something like eighteen years since he had the pleasure of meeting the Salisbury Gardeners at their headquarters, on which occasion he gave a lecture on Sweet Peas. In stating how very pleased he was to be amongst them again, he urged everyone to do all they could to instruct and encourage young men to grow and cultivate flowers, fruit and vegetables in better condition. In his opinion, the great need in horticulture to-day was young men with enthusiasm.

A fine exhibit of Onions, grown by Mr. P. Baglin, was on view.

READING AND DISTRICT GARDENERS'.

The continued interest shown in the work of this Association was manifested by the large attendance at the Annual General Meeting, held at the Abbey Hall, under the chairmanship of the President, Mr. Frank E. Moring.

The Annual Report and Statement of Accounts read respectively by the Hon. Secretary and Hon. Treasurer, showed the Association to be in a flourishing and prosperous condition. The following were elected to the several offices for 1928:—President, Mr. Frank E. Moring; Vice-Presidents, Mr. Leonard Sutton, C.B.E., Mr. Alderman F. B. Parfitt, and Mr. E. P. Foquett Sutton, M.B.E.; Chairman, Mr. H. Reeves; Vice-Chairman, Mr. W. Broomfield; Hon. Treasurer, Mr. A. H. Leaver; Hon. Secretary, Mr. H. G. Cox; Hon. Assistant Secretary, Mr. E. J. Dore; Committee, Messrs. G. Carter (Mapledurham), W. Chislett (Bill Hill), C. S. Clacy (Earley), A. J. Cobb and H. H. Cook (Shinfield), A. H. Dew (Suthamstead), A. H. Fulker (Reading), Goddard (Bear Wood), F. Goodges (Southcote), A. H. Gower (Calcot), F. J. Green (Aldermaston), C. J. Howlett (Earley), J. R. Lloyd (Shinfield), C. Moulton (Reading), F. G. Rabbetts (Bulmershe), F. Townsend (Reading), H. Wynn (Woodcote), J. Wynn (Checkendon), and J. Young (Wokingham).

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

Mr. C. H. Curtis presided over the monthly meeting of this Society, held in the R.H.S. Hall, on January 9. Six new members were elected. Ten members withdrew interest from their Deposit Accounts amounting to £36 0s. 6d. The death certificates of three deceased members were received, and the sum of £111 11s. 0d. was passed for payment to their respective nominees. The Sick-pay for the month on the Ordinary side was £110 11s. 5d., and on the State Section £94 17s. 8d.; Maternity benefits came to £2 0s. 0d.

Grants amounting to £39 6s. 0d. were made to seven members for dental and optical treatment, and eight other cases were considered.

Obituary.

William Nicholson.—One of the best-known florists in Massachusetts passed away on January 3, in the person of William Nicholson, of Framingham, Mass. The deceased was a native of Windermere, Westmoreland, England, and was employed as a boatman on the lake before going to the United States fifty years ago. He found employment for several years as a gardener on a private estate, but built a range of greenhouses in 1890, in which were grown winter Tomatos, Carnations and Roses; in those days so much as $2·50 per pound was sometimes paid for Tomatos. Building more greenhouses, Mr. Nicholson made Carnations his great speciality, and was singularly successful in their culture. He had raised several varieties which were introduced so long ago as 1895. He was a past President of the American Carnation Society and a member of quite a number of horticultural organisations. He retired from business some years ago, and his business, which had grown to large proportions, was taken over by his eldest son, William R. Nicholson. His wife, who was a native of Wales, predeceased him; he is survived by two sons and two daughters and a number of relatives in Windermere, England, which he last visited about thirty years ago. There was a very large gathering at St. John's Episcopal Church, Framingham, where funeral services were held on January 7. The deceased had been for many years senior warden of this church.

Friedrich Tamms.—German horticulture has sustained a heavy loss in the death, on December 3 last, of Friedrich Tamms, formerly professor at the Horticultural School of the Saxon Horticultural Society at Dresden, and later, Director of the same school, at Laubegast. Born at Neisse, Schlesien, on January 23, 1859, he proceeded, on the completion of his general education, to the Gardening Institute at Wildpark, Potsdam, after which he obtained in succession several good appointments. In 1899, he joined the staff of the Dresden School, and on the removal of the school to Laubegast, he was appointed Director. Under his direction the school made excellent progress until the outbreak of the war, when matters became very difficult, and he lost his son; he did his utmost, however, to keep the Institute going until the completion and opening of the new State Horticultural College at Pillnitz. Here he worked for a few years, and won general esteem and affection, but retired in 1924 to seek the rest he had so well merited. His energy, however, still found fresh outlets; among others, the Jubilee Horticultural Exhibition at Dresden, in 1926, in the preparations for which he rendered valued assistance. The cause of his death was heart trouble.

ANSWERS TO CORRESPONDENTS.

Begonia Plants Failing.—*G. A. G.* The Begonia roots are attacked by eelworms (Heterodera radicicola) which cause the irregular swellings and, finally, the rotting of the root system, and generally unhealthy condition of the plants. All diseased plants should be burned and the infected soil removed and sterilised before being used again.

Conifers and Evergreen Shrubs for North Border.—*G. F. M.* Suitable trees are Cupressus macrocarpa, Pinus insignis, Pinus nigricans, Quercus Ilex, Arbutus Unedo, and Thuya plicata, while useful shrubs are Viburnum Tinus, Pyracantha Lelandei, P. Rogersiana, Rhododendrons Cunningham's White and Cunningham's Blush; Genista virgata, G. cinerea, Spartium junceum, Garrya elliptica, Ligustrum lucidum, Cotoneaster Francheti, C. Harroviana, C. salicifolia, and C. Henryana.

Names of Fruits.—*H. G. P.* 1, Scarlet Pearmain; 2, Hoary Morning; 3, Kentish Fillbasket; 4, Belle Dubois (syn. Gloria Mundi).—*J. G. M.* 1, Radford Beauty; 2, Royal Russet; 3, Fullwood; 4, King of the Pippins; 5, Lewis Incomparable; 6, Duke of Devonshire; 7 and 11, decayed; 8, Garrett's Golden Pippin; 9, Lord Lennox; 10, Northern Greening; 12, Hanwell Souring; 13, Small's Admirable; 14, Golden Noble; 15, Easter Pippin; 16, Pear Vicar of Winkfield.

Names of Plants.—*R. C.* 1, Dioscorea discolor; 2, Aeschynanthus; cannot name species without flowers; 3, Sedum sarmentosum var. variegatum.

Communications Received.—Dr. R. F. S.—L. S.—C. B.—R. J. S.—W. R. J.—Altho.—A. H. C.—R. H. C.—R. E. A.—J. S. T.—H. W.

MARKETS.

COVENT GARDEN, Tuesday, January 17th, 1928.

Plants in Pots, etc.: Average Wholesale Prices.

(All 48's except where otherwise stated).

	s. d. s. d.
Adiantum cuneatum per doz.	12 0-15 0
—elegans	12 0-15 0
Aralia Sieboldii	9 0-10 0
Araucarias, per doz.	30 0-40 0
Asparagus plumosus	12 0-18 0
—Sprengeri	12 0-18 0
Aspidistra, green	16 0-60 0
Asplenium, doz.	12 0-18 0
—32's	24 0-30 0
—nidus	12 0-15 0
Cacti, per tray 12's, 15's	5 0—7 0
Crotons, doz.	30 0-45 0
Crytomiums	10 0-25 0
Cyclamens, 48's, per doz.	27 0-36 0
Daffodils, 48's, per doz.	15 0-18 0
Erica gracilis, 48's, per doz.	24 0-30 0
— — 60's, doz.	12 0-15 0
Erica, mixed, 72's, per doz.	8 0—9 0
—hyemalis, 48's, per doz.	18 0-24 0
—nivalis, 48's, per doz.	24 0-27 0
— — 60's, doz.	12 0-15 0
Hyacinths, 3's, per doz.	24 0-30 0
—60's, per doz.	12 0-18 0
Marguerites, 48's, per doz.	18 0-21 0
Nephrolepis in variety	12 0-18 0
—32's	24 0-36 0
Palms, Kentia	30 0-48 0
—60's	15 0-18 0
Pteris in variety	10 0-15 0
—large, 60's	5 0—6 0
—small	4 0—5 0
—72's, per tray of 15's	2 6—3 0

Cut Flowers, etc.: Average Wholesale Prices.

	s. d. s. d.
Adiantum decorum, doz. bun.	18 0-21 0
—cuneatum, per doz. bun.	12 0-15 0
Anemones, St. Brigid, per doz. bun.	6 0—9 0
—fulgens, per doz.	7 0—8 0
Arums (Richardia), per doz. blooms	10 0-12 0
Asparagus plumosus per bun. long trails	2 6—3 6
—med. sprays	2 0—2 6
short ,,	— 1 0
—Sprengeri, bun. long sprays	2 6—3 0
med. ,,	1 0—1 6
short, ,,	0 6—1 9
Camellias, 12's or 18's, per box	3 0—3 6
Carnations, per doz. blooms	4 0—5 0
Chrysanthemums, per doz. blooms—	
—white	4 0—8 0
—yellow	5 0—8 0
—pink	5 0—8 0
—bronze	5 0—8 0
—red	4 0—5 0
—spray, pink, per doz. bun.	36 0-42 0
—spray, yellow, per doz. bun.	30 0-36 0
—spray, white, per doz. bun.	30 0-42 0
Croton leaves, per doz.	1 9—2 6
Daffodils, Golden Spur, per doz. bun.	15 0-18 0
Fern, French, per doz. bun.	10 0-12 0
Forget-me-not, per doz. bun.	12 0-15 0
Freesia, white, special, per doz. bun.	12 0-18 0
—	3 6—4 0
Gardenias, per doz. blooms	15 0-18 0
Heather, white, per doz. bun.	— 12 0
Hyacinths, Roman, per doz. bun.	15 0-18 0
—large white, per doz. spikes	4 0—5 0
Lilac, white, per doz. sprays	6 0—9 0
—mauve, per doz. spikes	6 0—9 0
Lilium speciosum album, per bun.	6 0—7 0
—short, per doz.	5 0—6 0
—rubrum, long, per bun.	5 0—6 0
Lilium rubrum, short, per doz.	3 6—4 0
—longiflorum, long, per bun.	7 0—7 6
—short, per doz. blooms	— 7 0
Lily-of-the-Valley, per doz. bun.	30 0-36 0
Marigolds, per doz. bun.	3 0—4 0
Myrtle, green, per doz. bun.	1 6—2 0
Narcissus Soleil d'Or, per doz. bun.	9 0-12 0
—Grand Primo, per doz. bun.	5 0—6 0
—Paper White, per doz. bun.	6 0—8 0
Orchids, per doz.	
—Cattleyas	21 0-30 0
—Cypripediums	8 0-10 0
Roses, per doz. blooms—	
—Columbia	10 0-15 0
—Madame Butterfly	12 0-15 0
Smilax, per doz. trails	3 0—4 0
Tulips, per doz. bun.—	
—single, white	21 0-30 0
— — yellow	24 0-30 0
— — red	18 0-30 0
— — pink	30 0-42 0
— — terra cotta	24 0-30 0
— — mauve	18 0-30 0
Violets, per doz. bun.	4 0—6 0
French flowers—	
—Anemone, De Caen, doz. bun.	15 0-18 0
—blue, per doz. bun.	7 0—8 0
—double pink, per doz. bun.	5 0—6 0
—Acacia (Mimosa), per doz. bun.	12 0-15 0
—Marigolds, per doz. bun.	4 6—5 0
—Narcissus, Paper White, per doz. bun.	3 0—3 6
—Gloriosa, per doz. bun.	4 0—4 6
—Soleil d'Or, per doz. bun.	4 0—5 0
—Ranunculus Barbaroux, per doz. bun.	7 0—8 0
—Carmine, per doz. bun.	5 0—6 0
—Romano, per doz. bun.	12 0-15 0
—Roses, Ulrich Brunner, per doz. blooms	6 0—9 0
—Violets, Parma, double, per bun.	4 0—5 0
—single, per doz. bun.	3 0—3 6

REMARKS.—The supply of Chrysanthemums in the cut flower department is gradually lessening, and prices are considerably firmer for disbudded blooms and bunches; there is not much to be recommended amongst coloured varieties. Tulips are much more plentiful and finer in quality, the variety William Copland being popular. Good pink and yellow sorts have been rather scarce during the past week. The varieties Rosina, Murillo and Vermilion Brilliant are the latest kinds offered. Carnations of good quality are a better trade, and a few Roses are still on offer from home growers, consisting of Madame Butterfly, Roselandia and Richmond. Lily-of-the-Valley is still limited in quantity and the small amount available is soon cleared. Consignments from Scilly, Guernsey and Cornwall are now much heavier and consist chiefly of Narcissus Grand Primo, N. Soleil d'Or, Golden Spur Daffodils, St. Brigid Anemones and Single Violets.

Supplies from Holland consist of some exceptionally fine white and mauve Lilac, Prunus triloba and a good supply of Tulips and Lily-of-the-Valley.

In the French department, supplies were somewhat limited, but there was a general improvement in the quality. More Anemones, Ranunculi, Marigolds and Carnations have been on offer. Paper White Narcissus, Acacia (Mimosa), and some very fine mixed Anemones and single Violets have been mostly in demand.

Vegetables: Average Wholesale Prices.

	s. d. s. d.
Asparagus, Devon	8 0-10 0
—Paris Green	8 0-10 0
—Sprue	— 1 6
—"National"	14 0-15 0
Beans, Madeira, per box	3 0—8 0
—Guernsey, finest, per lb.	4 0—8 0
—ordinary	2 0—3 0
Beets	6 0—8 0
Brussels Sprouts ½-bag	2 6—5 0
Cabbage, St. Malo	4 0—6 0
Carrots	7 0—8 0
Cauliflower, per crate	8 0-10 0
Celery (washed), per doz. fans	18 0-36 0
Cucumbers, doz.	12 0-18 0
French Endive, per doz.	2 0—2 6
—Batavian, per doz.	2 0—3 0
Leeks, per doz.	3 0—3 6
Lettuce, French, round, per doz.	3 0—4 0
Mint, forced, per doz. bun.	4 0—8 0
Mushrooms—	
—Cups	2 0—3 0
—Broilers	1 6—1 9
Onions—	
—Dutch	7 6—8 6
—Spanish	13 0-15 0
Parsnips, cwt.	4 0—5 0
Potatos—	
—English, cwt.	5 0—8 0
—Guernsey, new, per lb.	0 8—1 0
—Azores, case	10 0-18 0
Tomatos, English, per lb.	— 1 6
Tomatos, Canary Islands	20 0-22 6
Turnips, per cwt.	3 6—4 0

Fruit: Average Wholesale Prices.

	s. d. s. d.
Apples, English—	
—Newton Wonder	4 0—8 0
—Lane's Prince Albert	4 0—8 0
—Bramley's Seedling	6 0-12 0
—Other cookers	3 0—6 0
—Trays, Coxes, 24's	8 0-15 0
Apples, American—	
—Newtowns	12 0-14 0
—Delicious	12 6-15 0
—Oregon, Newtown Pippin	13 6-17 6
Apples, Nova Scotian—	
—Greenings	16 0-24 0
—Ribston Pippin, per barrel	18 0-26 0
—Wellington	22 0-28 0
—Russet	28 0-34 0
Apricots, South African, per box	4 0—6 0
Bananas	16 0-24 0
Grape Fruit—	
—Dominica	20 0-25 0
—Jamaica	20 0-22 6
—Florida	— 30 0
Grapes, English—	
—Alicante	1 6—3 6
—Colmar	1 6—3 0
Lemons, Messina, per case	20 0-35 0
—boxes	10 0-17 6
Oranges, per case—	
—Valencia and Denia, per case	8 0-35 0
—Seville	20 0-22 0
—Jaffa	18 0-20 0
—Tangerines	1 0—2 2
Peaches, South African, tray	4 6-12 0
Pears—	
—Doyenné du Comice, per doz.	3 0—6 0
—Oregon Doyenné du Comice, ½ case	14 0-16 0
—Nelis	17 6-20 0
Pines, per case	17 0-32 0
Plums, South African—	
—Santa Rosa	5 0—9 0
—Methley	3 6—7 0

REMARKS.—For the time of the year, business conditions must be considered fairly good. The main feature just now is Cape fruits, the shipments consisting of Peaches, Plums, Apricots and a few Grapes. Generally, the produce is in good condition and meeting a fair demand. The Apple market is not very brisk, and quotations are inclined to be lower. A few good Bramley's Seedling, however, are in demand and making slightly higher prices. Hothouse Grapes are a moderately good business and may advance slightly in price. The Orange trade is still somewhat depressed, except for large fruits, which are selling quite well. A few English Doyenné du Comice Pears are still arriving, but the trade generally is well supplied with Californian Comice and Nelis Pears.

Canary Island Tomatos are a firm trade at advanced prices. Forced Rhubarb is very popular just now and supplies are rather below requirements. Hothouse Beans are scarce and costly. Forced Potatos are also a good trade and an improved demand is ruling for New Potatos from the Azores. Mushrooms are in steady demand, with little or no fluctuation in price. Salads are a good market and greenhouse vegetables are selling well at slightly higher prices. The old Potato trade is fairly good with a firm demand for the best varieties.

GLASGOW.

The stormy weather of the past week had a restricting influence on the business done in all sections of the market. Cut flowers were scarce, but as they were still in excess of the demand, prices further declined to the following levels:—Chrysanthemums, Winter Cheer and Baldocks Crimson, 10d. to 1s. 3d. for 6's; Heston White, 8d. to 1s. 3d. and Sunshine, 6d. to 8d. Tulips Thos. Moore, Brilliant and Mon Tresor, 9d. to 1/-; Couronne d'Or, 1s. to 1s. 6d.; Prince of Austria, Murillo, William Copland and Rosina, 1s. 3d. to 1s. 6d. Hyacinths sold at 9d. to 1s. 3d. for 3's. Golden Spur Daffodils were 1s. 9d. to 2s. 3d. per bunch. Carnations, 3s. to 4s. per dozen, and Roses, 9s. to 10s. Special Narcissi made 3s. to 4s., and ordinary ones, 6d. to 1s. 6d. Lilium longiflorum sold at 4s. to 6s. per bunch; Mimosa, 9s. to 11s. per case; Lily-of-the-Valley, 1s. 6d. to 1s. 9d.; and Ferns, 9d. to 1s. 6d.

Business in the fruit market was done on an exceptionally small scale. Apple prices were steady, except in the case of Starks, which advanced from 2s. to 6s. per barrel. Starks, No. 1, made 30s. to 34s.; No. 2, 26s. to 28s.; and No. 3, 20s. to 22s. Albemarle Pippins were worth from 55s, to 62s. per barrel, and Canadian Baldwins No. 1, 32s.; and No. 2, 28s. Other varieties remained unchanged. Jaffa Oranges averaged 17s. 6d. per case, and Valencia counts were cheaper at 12s. to 15s. 6d. for 300's; 8s. 6d. to 10s. 6d. for 360's and 504's; 14s. to 17s. for [illegible]40's; and 18s. to 26s. for 420's. Grape Fruit ranged from 15s. to 24s.; Californian Winter Nelis Pears, 26s. per case; Washington Apples 18s. to 20s.; Beurré Bosc, 12s. per box; Kippin Grapes, 3s. to 3s. 6d. per pad; Almeria Grapes, 32s. to 40s. South African Peaches made 5s. to 12s. per box; Santa Rosa Plums, 6s. to 9s.; Methley Plums, 4s. to 7s.; and Beauty, 6s. to 10s. Malaga and Seville Bitter Oranges were 18s. for 188's.

In the vegetable market Carrots sold at 2s. 6d. per dozen; Rhubarb, 50s. per cwt.; French Beans, 4s. per box, and Chicory, 7d. per lb. Teneriffe Tomatos made 8s. to 18s. per bundle; Lettuce, 3s. 6d. per dozen; Cauliflower, 5s. to 6s.; Salads, 2s. 6d.; and Mushrooms, 2s. per lb.

TRADE NOTE.

MANY fruit-growers this year are successfully using the British Tar Distillate winter wash known as "Mortegg," which is the result of long and careful experiment by the firm of Murphy and Son, of Mortlake. The laboratories in which the composition of this winter wash was worked out are at The Cedars, Sheen Lane, an old and most interesting mansion, which is said to have been built on the site of the old plague cemetery, from which the district takes its name. Incidentally, there are some lovely Cedars in the garden, and what is locally reputed to be the tallest Ginkgo in the country. The peaceful, almost sleepy outside aspect of the beautiful old house in its quiet and secluded grounds contrasts interestingly with the air of business-like energy and industry which prevails inside, where the handsome, panelled rooms have been arranged as offices and chemical laboratories, with the very minimum of interference with the amenities and properties of the building.

GARDENING APPOINTMENTS.

Mr. M. Hardwick, for the past two-and-a-half years Gardener to Miss BINGON, Henwick Grove, Worcester, and previously Gardener to the late SAMUEL BOSANQUET, Esq., Dingeston Court, Monmouth, as Gardener to Sir THOMAS MANSEL FRANKLEN, St. Hilary, Cowbridge, South Wales.

Mr. William Beale, for four-and-a-half years Gardener to the late W. D. ROSS, Esq., Craig Ard, Forest Hill, as Gardener to WALTER RAPHAEL, Esq., Hillside, Newmarket. (Thanks for 2/6 P.O. for R.G.O.F. Box.—EDS.)

Mr. J. E. Roberts, for the past four years Parks Superintendent to the Port Talbot Corporation, and previously Gardener at Ripple Hall, Worcester, and Newent Court, Gloucester, as Superintendent of the Parks and Cemeteries under the CHESTERFIELD CORPORATION. Mr. Roberts will take up his new duties on February 1.

CATALOGUES RECEIVED.

Seeds.

GEE AND SONS, Biggleswade, Bedfordshire.
BROWN AND WILSON, 10, Market Place, Manchester.
J. BONES AND CO., 172, Easter Road, Edinburgh.
HARRISON AND SONS, Leicester.
BRADSHAWS (LEICESTER) LTD., 10, Evington Road, Leicester.

Plants, etc.

THE ORPINGTON NURSERIES CO., LTD., Orpington, Kent.—Irises.
JOHN GOLDING, Fordham, Ely.—Flowers and Fruit trees.
DONARD NURSERY CO., Newcastle, Co. Down.—Shrubs.
C. ENGELMANN, LTD., Saffron Walden, Essex.—Carnations.

Foreign.

H. CORREVON, Floraire Nursery, Chene-Bourg, Geneva.—Seeds of alpine and perennial plants.

THE
Gardeners' Chronicle
No. 2144.—*SATURDAY, JANUARY* 28, 1928.

CONTENTS.

Alpine garden—
  Cotyledon simplicifolia 62
  Lupinus lepidus ... 62
  Potentilla Tonguei... 62
  Selliera radicans ... 62
  Sisyrinchium grandiflorum 62
Arnold Arboretum ... 57
Books, notices of—
  Beautiful Flowers of Kashmir 67
  Notes from the Edinburgh Botanic Garden 55
Cultural Memoranda—
  Bouvardias ... 62
  Winter - flowering Begonias ... 62
Flower garden—
  New Sidalceas ... 60
  Sidalcea candida ... 60
Foreign correspondence—
  Campanula petraea 69
Fruit garden—
  Pruning versus training of fruit trees 68
Fruit register—
  Pear Beurré Benoit 69
" Gardeners' Chronicle" seventy-five years ago 57
Glass flowers in Paris 56
Gypsophila fratensis... 69
Ideal gardens and plant lore 65
Lilies in the United States, hardy ... 60
Masters Memorial lectures 55
Obituary—
  Cull, W. A. 71
  Cypher, John ... 71
Orchid notes and gleanings—
  Anguloas 62
  Bletia Shepherdii ... 62
Plants new or noteworthy—
  Some new Siamese Begonias ... 66
Power for cultivation and haulage on the Farm 56
Rose-lover's library, a 67
Roses, some of the newer American ... 68
Saxifraga granulata fl. pl. 69
Seaweed, a new use for 55
Societies—
  Cardiff and District Gardeners' ... 71
  Elgin Horticultural 71
  Glasgow and West of Scotland ... 70
  Guildford and District Gardeners'... 70
  National Rose 70
Superphosphate and Potatos 69
Tenancy agreements and leases 68
Trees and shrubs—
  Choice trees and shrubs 61
  Clematis montana... 61
  Sophora japonica ... 61
Tucker, Mr. S. W. ... 56
Vegetable Garden—
  Forced Rhubarb ... 69
  The Shallot ... 69
Violas, a revision of ... 63
Ward's, Capt., botanical collection of 1924–5 57
Ward's, Mr. F. Kingdon, ninth expedition in Asia... ... 64
Week's work, the ... 58
Wisley, trials at ... 55

ILLUSTRATIONS.

Apple Highview Pippin 68
Clematis montana var. rubens 61
Cypher, the late Mr. John 71
Cypripedium Bedouin var. aureum 57
Lupinus lepidus 63
Odontonia Amoena 59
Sidalcea Mrs. D. J. Coleman 60
Tucker, Mr. S. W., portrait of 56
Ward's, Mr. F. Kingdon, ninth expedition : views of 64, 65

Average Mean Temperature for the ensuing week deduced from observations during the last fifty years at Greenwich, 39·2.

Actual Temperature—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London, Wednesday, January 25, 10 a.m. Bar. 30·4 Temp. 42°. Weather, Fine.

The Edinburgh Botanic Garden.

The recent issue of part LXXV of the *Notes* of the Edinburgh Botanic Garden completes the fifteenth volume and the twenty-seventh year of a publication which, for about twenty years has held an unique place in the annals of botany and horticulture. The reason for this is not far to seek, for although there is much else in both botany and horticulture and in the affairs of a great botanic garden than the discovery and elucidation of new plants, the pages of the familiar blue book have been the vehicle chosen for the publication of the majority of Chinese plants discovered in the past twenty years; human nature being what it is, it is only natural that the opening up of a new area of the temperate plant world, and the ticketing of its floral treasures, should be of consummate interest to all concerned. By the wisdom of Providence, for which gardeners cannot be sufficiently grateful, it came about that the major share of what may be termed the post-Wilsonian period of exploration of the mountain ranges of Western China fell to two Edinburgh men—Balfour and Forrest, and no one can doubt that the felicitous association of master and pupil has been of signal service to science and gardening. Incidentally, it has made the Edinburgh Garden the Mecca of keen gardeners the world over. There is no need for an attempt to apportion the share which science and discovery have had in the great work, and that may be left to posterity; but it is safe to say that while Balfour's interest in Chinese plants, and especially in Rhododendrons and Primulas was quickened by Forrest's discoveries, the explorer, aided and encouraged by the master, had the inestimable advantage—denied to many previous explorers—of direct personal association with the savant, who of all men of his generation was best fitted by temperament and training for the elucidation of the identity and affinities of the new plants. The explorer also had the comforting assurance that the fruits of his labour would receive the investigation and recognition due to them. Had Delavay been so happily served, or Wilson in his earlier expeditions, the horticultural world, as distinct from the botanical, would not have had to wait until much of the work of each had been done anew. What the influx of new Chinese species by the hundred, to say nothing of new genera, meant to a man of Balfour's receptive mind, may be imagined by those to whom the arrival of three or four new species is an event; but the enumeration of such a mass of material, coming on the top of the regular duties of the Keepership and of the University Chair of Botany, involved him in a volume of work which doubtless contributed to his undoing before he had nearly finished his task. The influence of men like Bayley Balfour extends beyond their time, and it is clear from the *Notes* before us that the Balfourian tradition still prevails. It is clear, too, that there is but slight slackening of the stream of new material which continues to reach Edinburgh from Asia. Messrs. Tagg and Forest continue their elucidation of the Rhododendrons found by the latter in north-western Yunnan, Szechuan and the Tsarong, the borderland of the matrix of the genus—an elusive area which the veteran explorer will probably find irresistible. They identify sixteen new species or varieties, and there are many more to come. There are also important additions to the scientific literature of Primulaceae in the enumeration by Professor Wright Smith and Mr. Forrest of nine new Forrestian species and varieties of Primula and two of Omphalogramma from the Burma-Yunnan frontier region (1924-5), as well as in an account of seven new species and varieties of Wardian Primulas from the Chino-Tibetan frontier. Dr. H. Handel Mazzetti—of the Vienna Natural History Museum—contributes an exhaustive revision of Chinese species of Androsace, the material in the Edinburgh herbarium having been placed at his disposal by the Regius Keeper—a happy sign of the melting of the post-war ice of prejudice. From the annual report, it is learned that the long-delayed reconstruction of the plant houses, commenced in Sir Isaac Bayley Balfour's time, is still in process of completion, while the general re-arrangement of the Garden proceeds as funds and opportunities permit. We observe that during the year the vacant post of Assistant Keeper of the Garden has not been filled. The history of this old garden—the oldest of all British Botanic Gardens except that at Oxford—is set out in the interesting "Historic Notice" which has a place in each volume of the *Notes*. It shows how, after the many changes and vicissitudes of about a century, the Garden finally settled down on part of Inverleith Park and how, in course of years, by purchase of a little additional land here and a little there, the Garden ultimately reached its present area of nearly fifty-eight acres in a ring fence. Since then the development and consolidation of the Garden has gone on and with it the re-organisation of the offices and the laboratories, which was necessary before the botanical school could be established. When Balfour succeeded Dickson as Keeper, forty years ago, he found the Garden under the dual control of the Treasury and the Office of Works, an arrangement which did not always make for smooth or efficient working, and one of the many changes introduced into the administration during his *regime* was the transfer of the control of the place to the Commissioners of Works in Whitehall. Following hard on that came the opening of the Garden to the public on Sundays, and although the table, printed on page xviii of the *Notes*, of admissions to the Gardens on week-days and Sundays since 1889, is eloquent testimony to the wisdom and foresight of Balfour's step, he did not gain his end without a battle royal in which bigotry and prejudice had free rein in Parliament and out of it. The table shows that during 1926, more than 851,000 visitors passed through the turnstiles—a number exceeded only in 1913, and the Sunday attendances accounted for more than half the total. For generations the post of Professor of Botany in the University of Edinburgh has been held by the Regius Keeper of the Garden, and the close co-operation between the University and the Garden is an important feature in the working life of both institutions, for the association of the two furnishes those University students whose inclinations lie that way with the means for scientific and practical training in botany and horticulture.

Masters Memorial Lectures.—The Masters Memorial Lectures for 1928 will be delivered at the meetings of the Royal Horticultural Society, held on Tuesday, February 28, and Tuesday, March 13, at 3 p.m., by Professor F. V. Theobald, M.A., F.E.S., V.M.H., in the Society's Lecture Room. The lectures will be on "Some Recent Advances in the Control of Insect Pests." The Masters Memorial Lectures were founded by the Society in 1909 in commemoration of Dr. Maxwell T. Masters, F.R.S., for many years Editor of *The Gardeners' Chronicle*—the great advocate of "Science with Practice."

Wisley Trials, 1928.—The Royal Horticultural Society will carry out trials in their Gardens at Wisley during the coming season, of Annual Lupins, Annual Phloxes, Salvias (bedding varieties), Brussels Sprouts, Carrots, Broad Beans, Egg Plants, Capsicums, Broccoli (branching types only), and Beet (long types only). One packet of each variety (of Broad Beans, one pint) for trial, should be sent to The Director, R.H.S. Gardens, Wisley, Ripley, Surrey, so as to reach him on or before February 15, 1928.

A New Use for Seaweed.—After considerable research, American chemists have, it is stated, perfected means of producing algin and alginates from Seaweed. Algin is said to be much more viscous than either gum-arabic or starch, and is expected to be preferred for sizing and finishing fabrics, and to be used in dyeing, colour-printing and paper-making.

Rhododendron Association.—The schedule of the third Rhododendron Show—the first exhibition of the new Rhododendron Association—is now available. The exhibition will be held at the Royal Horticultural Society's Hall, Vincent Square, Westminster, on Tuesday and Wednesday, May 1 and 2. Sixty classes are

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[*] *Notes from the Royal Botanic Garden.* Vol. XV., No. LXXV. Edinburgh, 1927.

provided, but these do not differ much from those arranged for previous exhibitions, with the exception that a Perpetual Challenge Cup is offered by Mr. Crossfield for the best four hybrids raised by, or in the garden of, the exhibitor, who must be an amateur. Copies of the schedule may be obtained from the Secretary, Royal Horticultural Society, Vincent Square, Westminster.

Power for Cultivation and Haulage on the Farm.—A Conference on Power for Cultivation and Haulage on the Farm will be held at the Rothamsted Experimental Station on Tuesday, February 7, 1928, at 11.30 a.m. The Chair will be taken by Sir Merrik Burrell, C.B.E., and the speakers (with their subjects) will include, among others :—Mr. H. C. Burford, M.I.Mech.E. (Past President, Institute of Automobile Engineers), "The Design of a General Purpose Tractor"; Mr. G. W. Watson, M.I.Mech.E. (Past President, Institute of Automobile Engineers), "The Care of the Tractor on the Farm"; Mr. E. Porter, B.Sc., Shifnal, Salop, "Practical Experience of Power on the Farm"; Mr. R. D. Mozer, "Rotary Cultivation"; and Dr. B. A. Keen, "Horse and Mechanical Power in Farm Operations." The discussion will be opened by Mr. W. C. Dampier-Whetham, Sc.D., F.R.S., and those taking part will include Messrs. H. Deck and R. Borlase Matthews. Arrangements will be made with the hotels and restaurants in Harpenden to provide visitors with luncheon at a charge of 3s. Those who purpose to attend the Conference should notify the Secretary at Rothamsted.

Glass Flowers in Paris.—All flower-lovers must regret to learn that the present fashion in dinner table decorations in the French capital runs to flowers made of glass and crystal. Unlike the artificial flower maker, who often produces excellent imitations of real flowers, the designers of this latest mode have allowed their fancies to run riot, and have evolved flowers such as never grew either in the field or the garden.

Reconstruction of Dornburg Gardens.—We learn from our German contemporary, *Gartenschoenheit*, that the castles and gardens of Dornburg, the picturesque region in the Saal Valley, so beloved of Goethe, and in which he spent a considerable time in 1828, are being restored. Although much visited by tourist admirers of Goethe's work, the towers and gardens had fallen into considerable disrepair, but the Goethe Society at Weimar took the matter in hand some years ago, with the result that, largely through the untiring efforts of Dr. Hans Wahl, of the Weimar Goethe Museum, both the castles and the gardens are to be thoroughly restored. Fortunately, some old designs for the gardens have been discovered which will make it possible, when the work is completed, for visitors to see exactly how they appeared when Goethe paced their walks in 1828, mourning the death of his great friend, Karl August Ruhe.

Iris Society's "Bulletin."—No. 5 of this interesting *Bulletin* contains much useful data for all lovers of Irises, and is a very creditable achievement on the part of all those connected with its production. It commences, as one would expect, with the Constitution and Rules of the Society, followed by reports of the meetings held during 1927. The articles dealing with Irises in America, with an interesting comparison of European and American varieties, and a suggestion from America for Iris co-operation, suggest a great future for this beautiful flower and emphasise its far-reaching popularity. The Report on the Iris Trials at Wisley is very gratifying. The holding of these trials at Wisley met with considerable protest from several pessimists, but the results fully justified the decision of the Iris Society, and reflected great credit on those who conducted them.

Revival of Flax Cultivation in Yorkshire.—At the Annual Meeting of the West Yorkshire Farmers' Union, at Leeds, at the end of last week, it was announced that a strong effort was to be made to revive the Flax industry in Selby. Last year 500 acres of Flax were grown, and the crop was considered to be satisfactory. In the past there have been certain difficulties regarding payment, but now arrangements have been made guaranteeing £65,000 for Flax, it is anticipated that the acreage under Flax will be increased to at least 2,000 acres.

Mr. S. W. Tucker.—Mr. S. W. Tucker, who is a Devonian, commenced his gardening career at Newcombes, Crediton, where he served under Mr. G. Locke, at that time a well-known grower and exhibitor of stove and greenhouse plants. Later, he served for a short time under Mr. Franklin at Streatham Hall, Exeter, vacating this position to go to Powderham Castle, the seat of the Earl of Devon, under Mr. Powell, where he stayed two years and obtained a wide knowledge of fruit culture; here, for the first time in his career, he saw Apple and Pear trees trained as cordons. From Powderham Mr. Tucker passed on to the gardens at Elvaston Castle, remaining four years, two as journeyman and two as foreman, under the late Mr. J. H. Goodacre. It was during his term of service at Elvaston Castle that he was afforded the opportunity of visiting many of the leading horticultural shows, staging exhibits of fruit grown in this famous garden. Two years were spent in Bodorgan Gardens, Anglesey, and four years under the late Mr. Pettigrew, at Cardiff Castle, where the culture of Melons and Peaches was a special feature. While at Cardiff he acted as Secretary to the Cardiff Gardeners' Association. His next appointment was that of inside fruit and plant foreman, under Mr. H. Ballantine, V.M.H., in the gardens of the late Baron Sir Henry Schröder, The Dell, Egham, where he obtained a considerable knowledge of fruits and plants of the newest and choicest kinds. At the end of four years here, he was appointed gardener to the Rt. Hon. Earl of Radnor, at Longford Castle, a position he has occupied for twenty-five years, one of his predecessors being Mr. H. W. Ward. Mr. Tucker is a clever gardener and cultivates large quantities of fruits at Longford, both inside and out. During the War, Mr. Tucker assisted, through the Salisbury Gardeners' Society, in organising the cultivation of additional food stuffs; he has been of great service to this Society, occupying the position of Vice-Chairman from its inauguration until he was appointed Chairman in succession to the late Mr. Challis.

MR. S. W. TUCKER.

Memorial to Austrian Scientist.—On December 10, 1927, a bust of the celebrated Professor Julius von Wiesner, who died in 1916, was unveiled at the University of Vienna. The ceremony was performed by the late Professor's successor at the University, Hofrat Professor Hans Molisch. Professor Wiesner's researches in the field of plant physiology and anatomy, and especially on the influence of light on plant growth, are of immense and far-reaching importance, and his standard works, *Rohstoffe des Pflanzenreiches* and *Das Bewegungsvermoegen Der Pflanzen*, secured him international fame. The last-named work especially, secured a world-wide recognition of his researches, and incidentally gained for him the personal friendship of Darwin, who became convinced of the error in his own observations which had been pointed out by Wiesner. A great number of students passed through the hands of the late Professor at Vienna University, many of whom have done good research work in the field of horticultural science.

A List of Dutch Dahlias.—From the publishers of the Dutch horticultural journal, *Floralia*, we have received a brochure drawn up under the auspices of the Nederlandsche Dahlia-Vereeniging by Mr. J. Mater, of the Leyden "Hortus," consisting of a list of all the new Dahlias produced since the commencement of the present century, which have received awards from the Vereeniging. Most of the varieties were raised in Holland, but there are a few exceptions. Within its limits, the list appears to be most comprehensive; at the beginning is an alphabetical list of the growers' names; then follows the formidable list of varieties, occupying fourteen or fifteen pages, with a description of each variety, the name of the raiser, and the different awards gained, with the date of each. In certain cases, illustrations are given in black and white, which give a good idea of the style and form of the variety. It seems unfortunate that a work which must have occupied so much time and trouble, and been fairly costly to produce, should be confined to Dutch Dahlias; but doubtless any attempt to make it international in character would have indefinitely widened the scope of the work, and perhaps militated against the accuracy which there seems no reason to doubt distinguishes the present volume.

Gardening Films in the United States.—We learn that an intensive campaign is being conducted throughout the United States to further the interests of horticulture. For this purpose, a series of four films has been prepared under the supervision of Mr. J. H. Burdett, Director of the National Garden Bureau, which deal with all phases of gardening. These films are loaned to seedsmen for the purpose of displaying them at local garden clubs, and, apparently, they are in great demand.

Sugar-beet Prospects in Scotland.—Pessimistic views were expressed regarding the Sugar-beet industry in Scotland by a number of Representative farmers at a meeting held at Glasgow on Wednesday, January 11, under the auspices of the West of Scotland Agricultural Discussion Society. Mr. William Caldwell of Melton, Leuchars, who lectured on the subject, expressed the opinion that unless the cropping yield was increased to twelve tons of Beets per acre the cultivation of Sugar-beet was doomed. In 1927, the yields were down to practically half of what they were in the previous year, and in the vast majority of cases the financial balance would be on the wrong side. His own yields had been as follows :—1925, 10½ tons per acre; 1926, 12½ tons; and only 7½ tons last season. He estimated the net cost at £16, or 32s. per ton on the basis of a 10-ton crop, to which was added 5s. per ton freight to the factory, leaving 3s. for management and profit, so that unless the yield could be increased well beyond the ten-ton figure, prospects were not hopeful. Besides, the harvesting of Beet was so laborious and irksome that growers would be compelled to limit their Sugar-beet cultivation to an area that could be conveniently handled. In the discussion which followed, Mr. Clark, Berwick, considered that any area over four acres to a pair of horses involved extra labour, and that Beet would not pay to grow on less than last year's prices. Mr. Matthew Howie, Irvine, said that Beet could only be grown in Ayrshire against Potatos, but Potatos had paid the farmer double the returns he received from Beet last season. Mr. John Gray, St. Andrews, remarked that railway rates had to cover two tons of earth for every acre of Beet crop, and as he was only a tenant, the landlord would not allow him to cart the farm off to the station at the rate of two tons for every acre! Mr. Howie, Mayo, Fife, thought the factory only knew a little bit more about manufacturing Sugar than the farmer knew about growing Beet. It was all very well to be smart when there was a big subsidy to divide among them. In winding up the debate, Mr. Caldwell, referring to the question of Potatos versus Beet, said that in 1926 he paid £9 per ton for Kerr's Pink seed Potatos and had to sell the ware at £2 2s. 6d. per ton. That showed what sometimes happened in connection with the cultivation of Potatos.

The Arnold Arboretum.—Efforts to secure an endowment fund of $1,000,000 for the Arnold Arboretum as a memorial to the late Professor C. S. Sargent, are meeting with much success. On January 1, $700,000 of the sum had been secured, and it is believed that there will be no great trouble in securing the balance during the present year.

Two Useful Diaries.—We have received two Diaries that should be invaluable to those connected with the different branches of horticulture for which they are designed. The first is the ***Fruit, Flower and Vegetable Trades' Year Book and Diary***;* this contains much useful information regarding the every-day problems encountered in each section of the trade, including a special article on "Book-keeping for Retail Florists and Fruiterers," which the publishers hope will "serve a useful purpose when the income tax authorities are so insistent in having a clear and correct balance sheet of income and expenditure." ***Webster's Foresters' Diary and Pocket Book***† should prove helpful to those engaged in arboriculture; it includes a list of foresters of Great Britain and Ireland. The hand-book section should be valuable to landowners, estate agents, auctioneers and nurserymen.

The Extinct Woad Industry.—It is interesting to learn that at Wisbech there are people still living who have been directly connected with the production of Woad, a dye yielded by Isatis tinctoria, and commonly used by the ancient Britons for dyeing their skins; at one time it was produced commercially, in conjunction with Indigo, for dyeing purposes. Although Woad production was once a fairly general industry in this country, it is now extinct, Wisbech enjoying the distinction of being the last scene of its manufacture.

Captain Kingdon Ward's Botanical Collection of 1924-25.—In an interesting communication made to the Linnean Society, on January 18, Mr. C. V. B. Marquand described briefly the botanical collection made by Captain F. Kingdon Ward in the Eastern Himalaya and Tibet in 1924-5. Captain F. Kingdon Ward accompanied the last Mount Everest Expedition when it started out from Darjeeling, then travelling in an easterly direction from Gyantse to Tsetang over unexplored ground, and crossing the Temo La to Tumbatse he entered the region in the neighbourhood of lat. 29°40′ N., long. 95° E., where the most important part of the collection was made. A short distance east of Tumbatse a number of high passes over the eastern extremity of the Himalaya were traversed. On the highest of these passes, the Nam La, over a southern spur of the lofty Namcha Barwa, at an altitude of 17,500 ft., a large number of alpines were collected. In the month of August, 1924, an extensive collection was made around the Trasum Lake, and the Bunda La, a pass of over 18,000 feet, the most northerly point of the expedition, was visited. On the return journey through Bhutan several species were found which had not been collected since they were discovered by Dr. Griffith nearly a century ago. An account of the Sino-Himalayan Flora was communicated by Captain Kingdon Ward to the Linnean Society last May, and appeared in *Proc. Linn. Soc.* 1926-27, pp. 67-74. Excluding the three genera Meconopsis, Rhododendron and Primula, which are dealt with elsewhere, the collection comprises 446 species, including 54 new species and 26 new varieties. The genera most strongly represented, apart from the three mentioned above, are Saxifraga, 26 spp., nine being new; Gentiana, 16 spp., one new; and Pedicularis, 208 spp., three new. Four new species of Lychnis, three of Corydalis, two each of Delphinium, Impatiens and Buddleia, and one each of 27 other genera are described as new. Captain Kingdon Ward's experiences and discoveries during the 1924-5 expedition—when he was accompanied by Lord Cawder—were recorded in *The Gardeners' Chronicle*, Vols. LXXV, LXXVI, LXXVII, LXXVIII and LXXIX.

Appointments for the Ensuing Week.—Tuesday, January 31: Royal Horticultural Society's Committees meet; Royal West Renfrewshire Horticultural Society's Council meeting. Wednesday, February 1: Nottingham and Notts. Chrysanthemum Society's meeting. Thursday, February 2: London Gardens Guild lecture; Linnean Society's meeting. Friday, February 3: Dundee Horticultural Society's lecture; Bridport Chrysanthemum Society's meeting; Accrington Chrysanthemum Society's meeting. Saturday, February 4: Blackburn Horticultural Society's meeting and lecture.

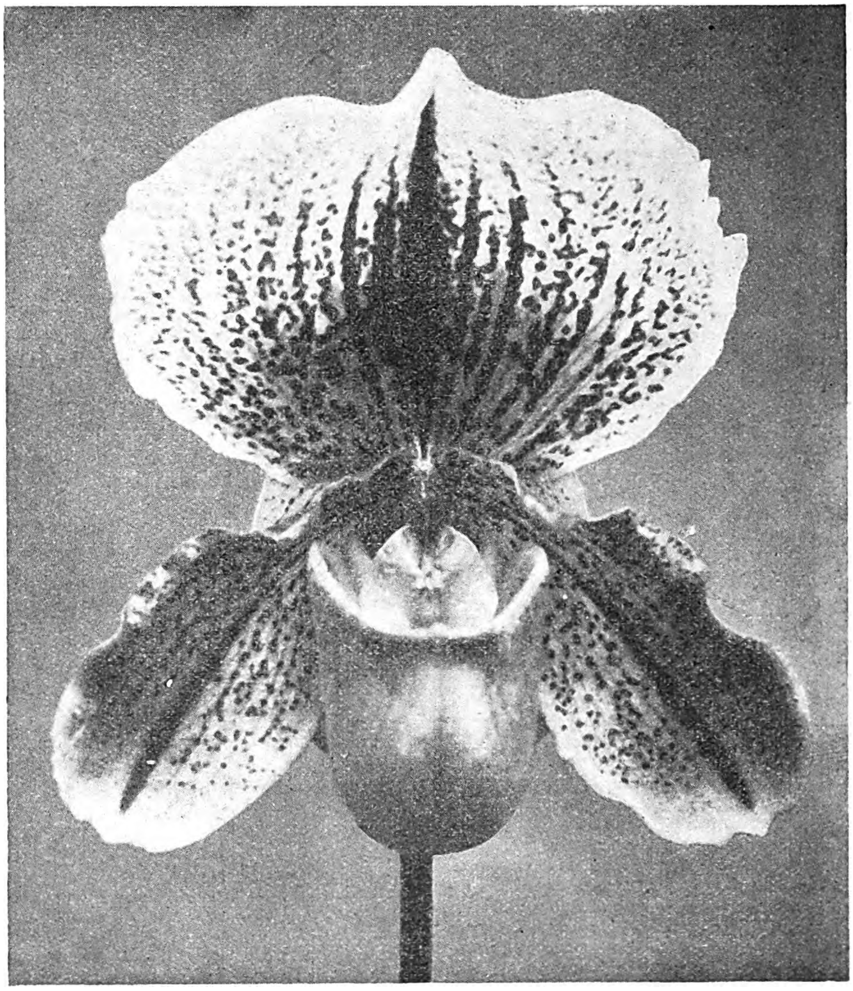

FIG. 36.—CYPRIPEDIUM BEDOUIN VAR. AUREUM.
R.H.S. Award of Merit, January 17. Flowers white, green, yellowish green and purple-brown.
Shown by F. J. Hanbury, Esq. (gr. Mr. Farnes), Brockhurst, East Grinstead.
(see p. 51).

"Gardeners' Chronicle" Seventy-five Years Ago.—*New Weeping Willow.*—When a new plant is brought forward it is proper time that some history of it should be given, for the satisfaction of the public. The Salix caprea pendula, or Kilmarnock Weeping Willow, which is now being advertised in your columns, was procured by me about six years ago from Mr. James Smith, an old and enthusiastic botanist, who resided at Monkwood Grove, near Ayr. He was an ardent collector and cultivator of all varieties of British plants. He did not inform me where he procured this variety of Salix caprea, but as the species is common in hedges and ditches all over Scotland, it is likely he picked it up on some of his rambling botanical expeditions. It does not seem to take well grafted to other Willows; I have therefore cultivated it principally from layers, which I trained up to poles. The plant is a most inveterate weeper, as pendulous as the weeping Ash, though not so rigid in its habit; its twigs are stouter than those of Salix babylonica, and it has large, broad, glossy leaves of a deep green colour; it flowers very freely on the young twigs in spring and is quite hardy, as a matter of course, seeing the Salix caprea is as hardy a plant as we have in this country. The name Kilmarnock Weeping Willow has been given to the plant to distinguish it from other Weeping Willows, such as the American Weeping Willow, sent out by Mr. Rivers some years ago. All who have seen the original specimen plant in the nursery here are very much delighted with it, and I trust it will be approved of by the public generally. *Thomas Lang, Kilmarnock. Gard. Chron., January 22, 1853.*

Publications Received.—*Seed Testing*, by John Stewart Remington; Sir Isaac Pitman and Sons, Ltd., Parker Street, Kingsway, W.C.2; price, 10/6 net.—*La Culture des Plantes en Pots*, by A. Petit; price 12 francs 50.—*L'Art de Bouturer*, by A. van den Heede; price 22 francs. Both published by the Librairie Agricole de la Maison Rustique, 26, rue Jacob, Paris.

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* Lockwood Press, 1, Mitre Court, Fleet Street, E.C.4. Price 2s. net.

† Ernest Benn Ltd., 154, Fleet Street, E.C. 4. Price 4s., including postage.

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN MOORE, Manchester.

Coelogyne Mooreana.—This is a welcome addition to the winter-flowering Orchids. It grows well in the intermediate house, but should be removed to the cool house when growth is completed, to remain there until the flowering period is passed. The erect flower spikes, produced from the centre of the young growths, are very effective and, for this genus, keep well. New roots are produced as the young growths develop, and any necessary repotting may be done after the flowers are over. Being a fairly strong grower, this Orchid requires well-drained pots and a compost of three parts A.1. fibre, one part Sphagnum-moss, and a quantity of coarse sand or crushed crocks. Pot the plants moderately firmly, and water sparingly until the roots and growths are well advanced, but increase the supply when the bulbs commence swelling. This plant is liable to attack by red spider during hot weather, therefore the undersides of the leaves should be sponged with soapy water occasionally.

Coelogyne cristata and its Varieties.—These will now be producing their flower scapes and require a gradually increased supply of water, care being taken to prevent moisture collecting in the new growths, or the flower scapes may decay.

Platyclinis glumacea.—Specimens of this free-flowering and fragrant Orchid are now sending up new growths, from the centre of which the flower spikes appear. Plants that have been resting in a cool house should be removed to a warmer one, where they will need an increased supply of water at the roots as growth advances. P. latifolia and P. filiformis are still resting, and only require sufficient water to keep the bulbs in a normal state; the supply should be increased as they start into growth, for flowering during the summer months. Fresh roots will be formed at the base of the young growths, when any necessary repotting may be done, using a compost similar to that advised for Coelogyne Mooreana. The flowers of this Orchid remain perfect for a long time if the plants, when in bloom, are removed to a cool, airy house.

Epidendrum vitellinum.—The autumn-flowering variety of this species, the blooms of which last so long in perfection, will be resting in a cool house. New roots will soon be developing from the base of the last-made pseudo-bulb. Directly these are noticed, repotting or top-dressing should be done, as at this period there is less danger of injuring the fleshy roots than if the work is left to a later date when growth is more advanced. Use well-drained pots or pans, and a good open compost of Osmunda fibre and a little Sphagnum-moss. Three bulbs to each lead are sufficient to retain; if specimen plants are required, one or two leads should be arranged towards the centre of the receptacle. A light position in the cool house should be given them, for they revel in solar heat and should not be heavily shaded at any time. Scale insects attack the plant and should be removed so soon as detected.

THE KITCHEN GARDEN.

By ALLAN FALCONER, Gardener to the CHEADLE ROYAL MENTAL HOSPITAL, Cheadle, Cheshire.

Peas.—Sow seeds of a dwarf-growing, proved variety in frames, on a hot-bed. If the tops of the plants are supported with sticks, Lettuces may be pricked out between the rows as a catch crop.

Potatos.—By planting Potatos on a hot-bed in brick frames, in rows eighteen inches apart, with ten inches between the sets, and using a variety such as Midlothian Early, that only produces a small amount of haulm, good crops may be produced to follow those grown in pots. If grown in soil of a sandy nature, with half leaf-mould, which has been sterilised, excellent results may be obtained, and the produce will be much appreciated at a time when good vegetables are scarce.

Turnips and Radishes.—Small successional sowings of Turnips and Radishes should be made according to frame-room available. In colder districts certain methods and times should be modified to meet the climatic conditions; in this particular district, for instance, a fortnight later will be soon enough for sowing these subjects.

Parsley.—In spite of every attention, it sometimes happens that this particular herb becomes very scarce after a hard winter, especially after heavy falls of snow. By sowing a small quantity of seeds in boxes, pricking out the seedlings two inches apart into other boxes, growing them on so fast as is practicable, and then planting them either in a rough frame or in the open, the deficiency is made up much more quickly than by relying on outside sowings.

Tomatos.—Seedlings from the sowing recommended in my previous notes will be ready for pricking out into two-and-a-half-inch pots containing a light, sandy compost. Young Tomato seedlings are occasionally difficult to raise in some districts; they should never be allowed to become drawn. Pot the seedlings immediately they are ready, *i.e.*, before the second leaf is made, in a light mixture of loam, leaf-mould and sand, which has been warmed to the same temperature as the house, and then place them in a temperature of 60° for a few days; if they are lightly syringed, watering may be deferred. As the young plants make headway, they may be gradually inured to cooler conditions. When they are ready, transfer them to four-inch pots, using good fibrous loam, leaf-mould and sand, with an addition of wood-ash and lime-rubble. Grow the Tomato plants so sturdily as possible, and eventually transfer them to their fruiting quarters. If possible, all soil and receptacles for Tomatos should be sterilised; there is no doubt that much better results are assured by paying attention to this important matter.

FRUITS UNDER GLASS.

By T. PATEMAN, Gardener to SIR CHARLES NALL-CAIN, Brocket Hall, Hertfordshire.

Successional Vines.—To provide a succession of fruits, the vinery—having been thoroughly cleansed, and the borders having received every care and attention with regards to top-dressing—should now be closed. If the outside conditions are cold at the time of closing, use sufficient fire heat to maintain a night temperature of 48° to 50°; but, on the other hand, should the outside conditions be mild, a few more degrees of heat will not prove harmful. A slight rise of temperature during the day, caused by solar heat, will prove beneficial, and unless the temperature rises beyond 65°, no air need be admitted. If it is found necessary to open the top ventilators for a short time, they should be closed early and the vines lightly sprayed in time to become dry again by nightfall. Should the outside conditions prove cold, judgment must be used with regard to the damping of the floors. Where the vines are young, they will be found to break more evenly into growth if the rods are bent over and tied in a horizontal position; they should be released when the buds commence growth. See that the borders are not lacking in moisture, and where it is found necessary to afford moisture, use water warmed to the temperature of 70°. Although the borders should never be lacking in moisture, they must never become soured or water-logged.

Figs.—Trees that are growing in borders may now be started into growth to secure an early crop. These will form a succession to those that are being forced in pots. The borders should be tested with regard to moisture, and if they prove to be on the dry side, should be thoroughly moistened with tepid water. The temperature during the first two or three weeks should not exceed 50° at night, with an increase during the day of from five to ten degrees. The day temperature of 55° is only given as a guide during dull weather. During sunny weather it may with advantage exceed this amount. On the other hand, it is not wise to force growth by artificial heat. It is far better to allow growth to develop slowly during the early stages, and by so doing reduce the risk of the trees casting their fruits. Damp the trees early on dull days with tepid water, so that they may become dry again by night fall. During mild weather open the top ventilators, but take precautions against cold draughts reaching the trees. As growth increases, decrease overhead syringing, for the Fig dislikes a steamy atmosphere. Fig trees may be obtained from cuttings of young, ripened tips, from four to five inches in length. These should be inserted in small pots and placed in a warm house. So soon as the roots have formed, the cuttings should be potted singly and kept growing freely. It is surprising what fine plants may be obtained in one season. The well-known Brown Turkey is one of the best varieties to grow in borders, while Negro Largo, White Ischia and Bourjassotte Grise are useful for pot culture.

PLANTS UNDER GLASS.

By J. COUTTS, Assistant Curator, Royal Gardens, Kew.

Ardisia crenata.—The brilliantly-coloured fruits of this plant keep fresh and in good condition for over six months, thus rendering it invaluable for greenhouse furnishing throughout the winter and spring. When growing, it enjoys an average temperature of 60°, and is easily raised from seeds or cuttings. If the latter method is employed, leading shoots should be used, for although the laterals root readily they do not produce leaders; large tops will root in a warm case, thus saving a year's growth. Raised from seeds, this plant takes three years to attain a useful size; therefore, to maintain a succession, a batch of plants should be raised every year.

Trachelium caeruleum.—If a few seeds of this subject are sown now, the resulting plants, if grown on into five-inch pots, will be useful towards the end of summer. Plants saved from last year should now be ready for a shift into larger pots. Grown in eight- or nine-inch pots they make fine large specimens for furnishing beds in the conservatory. The successful cultivation of this plant presents no difficulty, as it thrives in any good potting compost.

Trachymene caerulea.—Although an old garden favourite, this plant, until recent years, had practically disappeared from cultivation. It was introduced from western Australia in 1827, and is sometimes known as Didiscus caeruleus. It is a hardy annual, both useful and beautiful when grown in pots. I know of few other annuals that will give such a prolonged display, while it also lasts well when cut. Plants raised from seeds sown last autumn should be potted on into six- or seven-inch pots, while for a successional display seeds should be sown now. Cool, airy conditions at all times, are essential to its successful cultivation.

Clerodendron fallax.—This species, although generally regarded as a stove plant, is very useful towards the end of summer for greenhouse decoration. An early start must be made by sowing seeds now, or by inserting cuttings obtained from plants saved for this purpose. Later on, a batch of plants may be raised for flowering in the stove house during the winter months. In this neighbourhood fogs and lack of light precludes the successful use of this plant for winter-flowering, and no doubt the same difficulty arises in the vicinity of other large towns. Under such circumstances one must rely on a display during August and September.

HARDY FRUIT GARDEN.

By T. E. TOMALIN, Gardener to the EARL OF BESSBOROUGH, Stansted Park, Emsworth, Sussex.

Pruning and Training.—The pruning and training of fruit trees on walls should be completed so soon as possible. If fan- and espalier-trained trees received due attention in this respect twice during the growing season, little pruning will now be required beyond the shortening of the leading growths. These should be left about nine to twelve inches long, according to their strength. Weak growths should be cut back harder, and strong ones left the full twelve inches, cutting to a good wood-bud on the lower side of the branch. In covering a wall with fruit trees, "hasten slowly," is a good maxim to observe, because, if too great a length is left on the leading shoots in any one year, only the top six inches or so will break and form fruit buds; the rest will always remain bare, and a dead loss of valuable wall space will result. Bush Apples and Pears should be trained with an open centre, around which the branches should be evenly disposed at a distance of from twelve to eighteen inches apart. Shapely trees and bushes are formed by care in pruning the leading shoots to a bud pointing in the direction in which the branch is desired to extend—not always to an outside bud, but sometimes to left or right; occasionally, even to an inside bud in the case of varieties like Lane's Prince Albert, which is of rather drooping habit. The above remarks apply equally to standard trees, except that when dealing with strong-growing varieties such as Bramley's Seedling, too hard pruning should be avoided so soon as a good head has been formed. The best antidote to exuberant growth is fruitfulness, and, as it is not often advisable to root-prune standard trees, this condition may be induced by allowing greater freedom of growth for a year or two.

THE FLOWER GARDEN.

By J. G. WESTON, Gardener to the DUKE OF DEVONSHIRE, Chatsworth, Bakewell, Derbyshire.

East Lothian Stocks.—Very few members of the popular Stocks are more reliable than this type, and as they are usually most effective when massed, or grouped in separate colours, it is well to procure the seeds from a firm that makes a speciality of them, having selected the strain for many years. Many growers rely principally on sowing the seeds in autumn and growing the young plants on in cold frames. This method keeps the plants thoroughly firm and hardy, so that they may be planted out in their permanent positions early in the spring. Treated in this manner, they make strong, healthy plants and may be relied on to make a good display somewhat earlier than those sown in spring. If this method has not been followed, seeds should be sown now and placed in a warm house, where they will quickly germinate. Remove the seed boxes to cooler conditions before the young plants commence to become drawn. When they are of sufficient size to handle, prick them out in boxes of light, sweet soil, and keep them well up to the light. Do not over-water at any time, but especially when the plants are in the younger stages; a light damping overhead on bright days will usually suffice until root-action is in progress.

Turfing Operations.—Although early autumn is the best possible time to carry out any alterations entailing the removal and relaying of turf, in many cases circumstances make it impossible to do all that has been arranged for at that time. Every effort should therefore be made to take advantage of mild, open weather to push this work on. The earlier the work of relaying turf is completed, the better chance has the turf of getting thoroughly re-established before the drying winds of spring arrive. When arranging for grass walks or drives, see that sufficient drainage is given to carry off all surplus water quickly, otherwise such walks are very apt to get swampy and unpleasant to walk on, especially where there are overhanging trees. A good layer of broken clinkers and coarse ashes placed directly under the turf is of great assistance, not only in draining the walk, but also in promoting the formation of grass roots. A moderate amount of beating and treading on the new turf is an advantage, as it tends to knit the turves together. When fairly dry a light roller should be frequently used.

FOR NORTHERN GARDENERS.

By A. T. HARRISON, Gardener to the MARQUIS OF AILSA, Culzean Castle, Maybole, Ayrshire.

Cyclamens.—These beautiful winter-flowering plants are now becoming very useful, and if they have been well looked after, a close examination will reveal dozens of flower-buds tucked away under the foliage, in addition to the blooms that have expanded. Where the foliage is too dense, a leaf or two plucked out from the centre will give the necessary relief, and permit the flowers to develop naturally. Seedlings from last July or August sowings will soon be ready for transference from the seed-pans to small pots, provided a temperature of from 50° to 55° can be maintained for them after they have been disturbed.

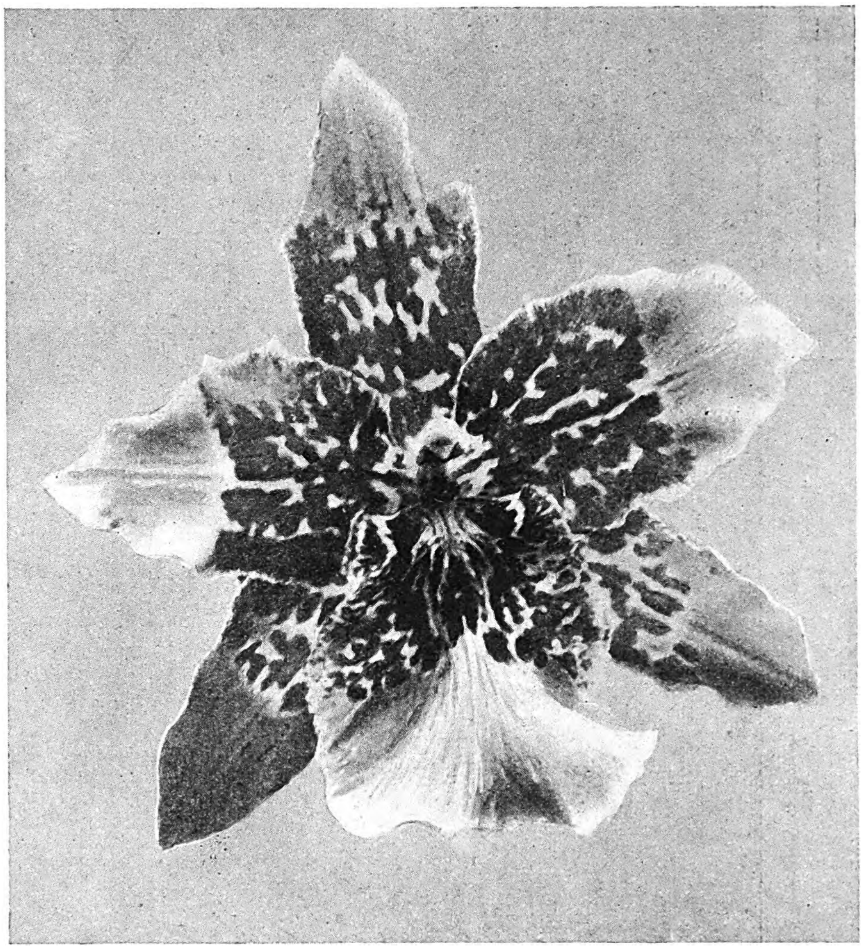

FIG. 37.—ODONTONIA AMOENA.

R.H.S. Award of Merit, January 17. Flowers purplish-rose and rose-red. Shown by Messrs. Charlesworth and Co. (see p. 51).

Gloxinias.—The corms of Gloxinias, which have been resting since last September, should now be started by shaking them clear of the old soil and placing them closely in boxes containing a compost of leaf-mould and sand, in which they will soon make fresh roots if kept in a humid atmosphere, with a temperature ranging between 60° and 70°. Last year's seedlings, if not dried off, will be showing signs of new growth. These may be had in flower very early in the season, and where necessary should be repotted into larger pots, or given a top-dressing of good soil to keep them growing freely. Seeds for next autumn's display should be sown at an early date; the seedlings, if grown well, may be had in flower in six months from the date of sowing. Many charming varieties are now obtainable, and where they have not yet been tried, the erect-flowered and spotted types are recommended.

Sweet Peas.—Sweet Peas sown in September or October will now be well advanced. If the pots are well-filled with roots, the plants should be moved into a larger size, using a good open compost. Keep the plants well up to the light, in a moderate temperature, in order to prevent them from becoming drawn. Seeds should now be sown to provide plants for planting out in April. Paper pots are useful receptacles in which to raise Sweet Peas. The usual method, however, is to sow from three to five seeds in a three-inch pot, and when they have germinated keep them growing in a cool house until planting-out time, supporting them, if necessary, by placing small, twiggy branches among them. So numerous are the varieties of Sweet Peas that those commencing their cultivation must feel bewildered when trying to make a selection. For the beginner, however, most firms offer selections which consist of twelve, eighteen or twenty-four first-class varieties, and in these may be found a ready solution of the difficulty.

Closing Vineries.—The end of January is probably the best time to close the vineries in order to conserve heat and moisture so that the vines may be encouraged to start into growth again, while the houses so closed make useful accommodation for raising many of the seedlings mentioned above. The borders, if dry, may be given a supply of tepid water, but nothing in the nature of a soaking should be required for two or three months, syringing and damping down being sufficient, but this also must be discontinued to a great extent should frosty weather prevail. The late vinery should now be pruned and cleansed, and left to start naturally towards the end of March.

FLOWER GARDEN.

SIDALCEA CANDIDA.

Recently, the labours of Mr. Hemsley have added several new treasures to our garden Sidalceas, and it is difficult to say when the production of novelties in the genus will come to an end; one hopes that many more lovely varieties may be produced, to the lasting gain of our gardens.

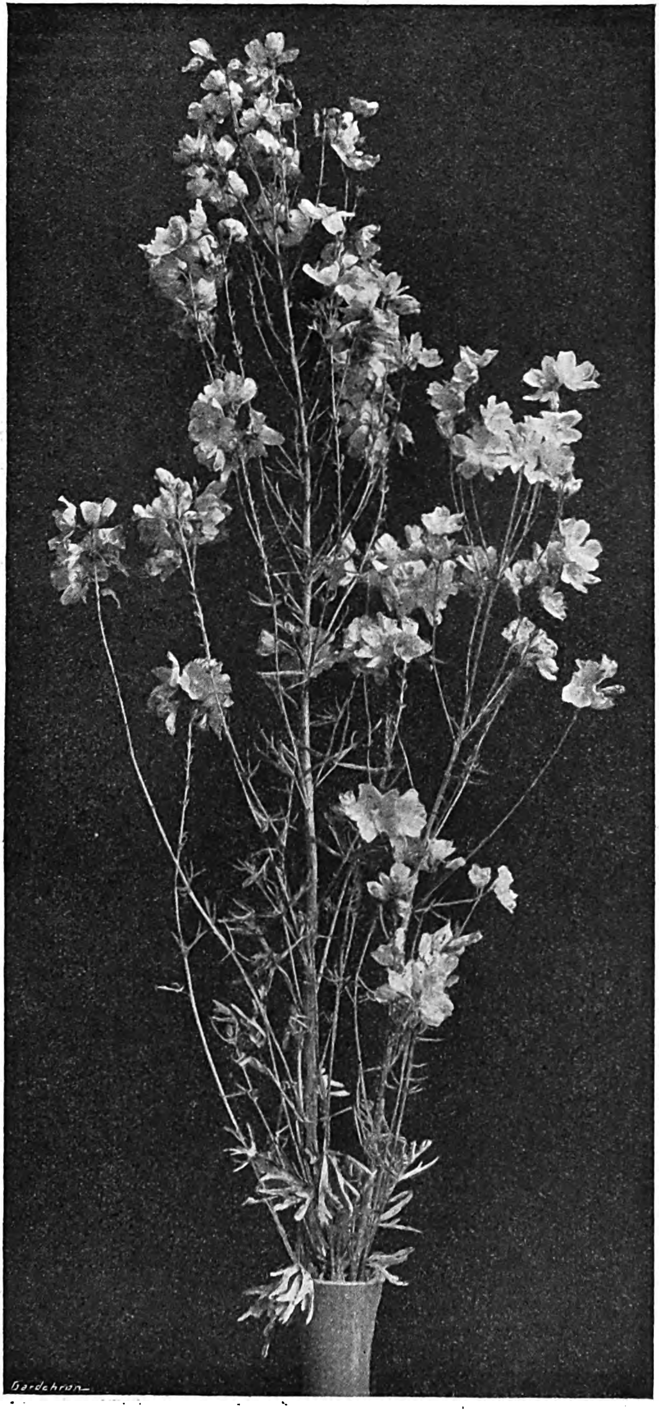

FIG. 38.—SIDALCEA MRS. D. J. COLEMAN.

At the same time, we need not be blind to the beauties of the older Sidalceas, like S. candida, the subject of this note. So far, it is as it came from Dame Nature's laboratory, and very attractive; possibly it may be improved without the sacrifice of any of its good qualities.

It is the best white Sidalcea, or False Mallow, and a very good border flower for summer effect. Its standard height is about three feet, but this depends upon various factors, such as soil, moisture, etc. It will do well in any good border soil and will live for many years, only requiring to be divided occasionally. It is a most pleasing plant with neat, light-green leaves, and spikes of large, white flowers of the characteristic appearance of the Mallows, to which natural order it belongs.

S. candida may be raised inexpensively from seeds sown under glass during April or May; they will give a good stock of plants, although these will not bloom the first year. *S. Arnott.*

NEW SIDALCEAS.

During recent years, much fine work has been accomplished in the production of improved varieties of this popular herbaceous plant, while among those who are responsible for these acquisitions Messrs. Stark and Sons, Ltd., of Fakenham, Norfolk, occupy a foremost position.

Of the many new varieties now on the market, one of outstanding merit is Mrs. D. J. Coleman (Fig. 38), a plant of tall, graceful habit, with large, deep, rosy-carmine flowers, borne on slender wiry stems during late August.

Other notable forms raised by the Messrs. Stark, and that deserve inclusion in all up-to-date borders, are, The Jewel, Hiawatha, Glory and Elegance. The Jewel is a dwarf variety of bushy habit, with rose-pink and apricot flowers. It received an Award of Merit at the Shrewsbury Flower Show, last year; while Hiawatha has received a similar award from the Royal Horticultural Society. Glory and Elegance are tall-growing, free-flowering varieties; the former has glossy, deep rose-coloured blooms, those of the latter being pinkish mauve.

The Sidalceas in general are quite hardy, and flourish in ordinary garden soil of good texture.

HARDY LILIES IN THE UNITED STATES.

During the past few years there has been a tremendous increase in the interest in hardy Lilies in the United States. Much of this has followed the introduction and popularisation of that most dependable of all garden Lilies, L. regale, which appears to succeed well in nearly every part of this country. Commercial plantings of this variety are now on a very heavy scale, especially in the States adjacent to Puget Sound and the South, although there are also quite large batches to be found in Ohio and the Eastern States. Dr. David Griffiths, of Washington, bulb expert of the United States Government, gathered statistics of the seed and bulb production of this Lily for last season; it amounted to 350 lbs. of seed and about 1,000,000 bulbs. The fecundity of this Lily is such that at the present rate of production it will not be long before it is quite cheap, although hitherto the demand has exceeded the supply for good-sized bulbs.

I have found seedlings make headway much faster than bulblets, and are therefore to be preferred. It seems passing strange that while no amount of frost will harm L. regale bulbs in the soil, and that they are unharmed even if allowed to lay on the ground unprotected all the winter, the late spring frosts will often cut the shoots down; for this reason it has been found necessary in the warmer States to lift all the bulbs each fall, store them in a cool cellar over winter, and replant them in spring.

The real value of L. regale as a forcing Lily is gradually being appreciated. While I do not think there is any likelihood of it ever rivalling L. longiflorum as an Easter-flowering plant, on account of the greater purity of the latter, L. regale is much more graceful and experience has shown us that it can be forced just as easily as the former. The bulbs must, however, be kept out-of-doors or in a cold cellar, and not started before January; they must then be given a temperature of 60°, or even more, at night, and they will be flowered easily for Easter. I had no trouble in flowering them earlier than L. longiflorum giganteum last year, and found that when grown several together, in pans, they made admirable Easter plants. There seems no good reason why L. regale should not soon become as popular for pot culture as L. longiflorum, L. candidum, L. speciosum, L. auratum and L. testaceum are to-day on private estates as well as in commercial establishments.

While L. regale is now easily the leader amongst hardy Lilies, the great renaissance embraces all Lilies which will succeed in the open, and plant lovers who a few short years ago would not try more than half-a-dozen kinds, are now eager to try thirty or more. Our climate in New England is possibly not so good as the British for some Lilies, on account of our much more torrid summers and severe winters; on the other hand, we usually get snow as a winter mulch over a fairly long season, with the soil hard frozen below it, and bulbs do not get the soakings they do in ordinary English winters. This is all to the good for kinds which resent too much moisture.

As a rule, the Pacific coast Lilies are, at best uncertain here, and the noble L. giganteum is rarely met with on this side; but, on the contrary I have seen L. Henryi here nine feet in height, and it has been known to carry seventy-five flowers to a stalk; L. testaceum does very well; L. croceum, L. Batemanniae, L. Hansoni, L. Martagon, L. Willmottiae, L. Davidi, L. tenuifolium, all of the umbellatum, elegans and tigrinum section, and our fine native sorts, such as L. superbum, L. Grayi, L. carolinianum, L. canadense and L. philadelphicum, are quite at home. L. Sargentiae thrives in cold Vermont when deeply planted; L. centifolium is evidently going to thrive; L. japonicum, in well-drained pockets, has, in at least one garden, persisted for ten years, and where temperatures go as low as 20° below zero at times; while the hybrid between L. Sargentiae and L. regale, originally named L. princeps, when it appeared as a natural hybrid, and since known as L. George C. Creelman and L. sar-gale when artificially raised in Canada, does very well hundreds of miles north of Massachusetts.

It is safe to state that too rich soil has ruined more Lilies than any other one cause in American gardens, but garden lovers are gradually beginning to realise this, and with deeper planting and the use of more sand, leaf-mould and peat-moss, better results will follow. Few growers are able to keep L. auratum for more than a couple of seasons; I find that seedlings of both this and L. speciosum germinate very readily here from fresh seeds, and I think that in the not distant future home-grown bulbs of both will be offered, and that these, while smaller, will, especially in the case of L. auratum, stay longer with us than the large imported bulbs. *W. N. Craig, Massachusetts, U.S.A.*

TREES AND SHRUBS.

CLEMATIS MONTANA.

FOR quickly covering an old tree or pergola, garden shed or large porch, there is nothing more satisfactory than Clematis montana. When such an authority as Mr. W. J. Bean describes this species as "undoubtedly one of the loveliest of all climbers," one feels that he is according the plant no more than its full due. C. montana is not only unsurpassed in grace, extraordinary vigour and adaptability to almost any soil or situation, but it is quite hardy and one of the earliest of climbers to come into flower. It wreathes its long, slender branches with white flowers in May, and so profusely are these blossoms yielded that a well-grown plant becomes a cascade of snowy whiteness.

A Chinese variety of this species (which is a native of the Himalayas) was discovered by Wilson in 1900, and named C. montana var. rubens (Fig. 39). The flowers of this variety are an attractive shade of lilac, or bright rosy-red, and the foliage is rather darker and more ruddy. This is a magnificent climber, and one which need fear no rivals when festooned from top to base with trailing ropes of vivid colour. There is also a variety called rubra, of rather a richer tint than the typical var. rubens. Whether this is an offshoot of the latter I do not know, but it is quite distinct enough to deserve a place anywhere. Then there is that curious member of the montana group known as var. Wilsoni. This has larger flowers, often three inches across, than the May-flowering type, and is especially useful since it does not bloom until July or August. As C. montana flowers on the previous year's wood, any pruning that must be done—the less the better, by the way—should be carried out immediately after blossoming. *A. T. J.*

CHOICE TREES AND SHRUBS.

THE notes on Leptospermum scoparium Nichollii, by Mr. Acworth, in *The Gardeners' Chronicle* of January 14, were most interesting, and lead one to suggest that the milder winters justify us in trying out-of-doors many "tender" plants that were quite out of the question thirty, or even twenty years ago.

The risk nowadays with many plants is not so much the winter frosts as the late spring frosts; many kinds that withstand up to 20° of frost in the winter may be killed by half that amount at the end of March. When the plants are dormant they are quite safe, but after they begin to fill up with sap they are less able to withstand frost.

It would surprise many people to learn that in Ulverston, Lancashire, there are nice specimens of such plants as Tricuspidaria lanceolata, Carpenteria californica, Guevina Avellana, and Lomatia ferruginea, while at Ripon, Yorkshire, which must be quite sixty miles from the sea coast, and very exposed, such plants as Pittosporum Mayi, Pittosporum Silver Queen, Solanum crispum, Clianthus puniceus and Cistus algarvensis thrive, although they are described in most horticultural works as not hardy.

It is, of course, in exposed positions where plants are not allowed to make a lot of soft growth, that frost does least harm; a plant that is exposed will not make growth so early as one that is snug amongst other bushes, but Jack Frost seems to get into the snug corners as well as the exposed positions, and a plant in the exposed position will withstand many more degrees of frost than the well-sheltered plant.

The gardens here are situated on low ground, and we have known Dahlias cut down in September, while half-a-mile away, high up on a hill, Dahlias were quite good until November; during the present winter, Hydrangeas were cut down here in October, while 600 feet higher they were quite good until the middle of December.

I am inclined to think that many losses could be avoided by putting in plants that have been thoroughly hardened-off before planting, or, better still, by insisting on plants that have been grown out-of-doors only. *W. Slinger, Newcastle, Co. Down.*

SOPHORA JAPONICA.

THE specific name of this splendid September-flowering tree is somewhat misleading, for it is not a native of Japan, but of China. Formerly it was supposed that Japan was its native country, but it now appears that such is not the case, and that the many fine specimens in Japan have been introduced.

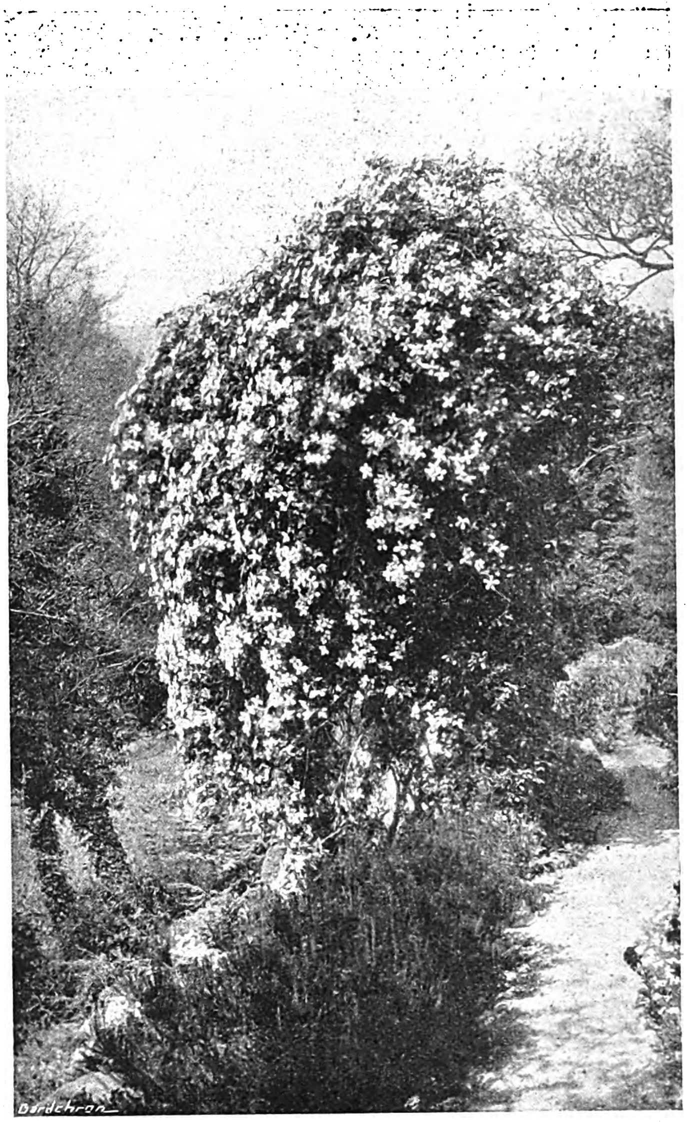

FIG. 39.—CLEMATIS MONTANA VAR. RUBENS.

It was introduced into this country so long ago as 1753, and is easily recognised by its dark green, glossy, pinnate leaves, which remain green long after most deciduous trees have shed their foliage The bark on the trunk of an old specimen is grey in colour, and is corrugated in a similar manner to that of an Ash.

The flowers are borne in branched, terminal panicles; they are small, Pea-like, and of a creamy-white colour. They are very freely produced on old trees, especially after a hot summer, but trees under thirty or forty years of age seldom flower.

Its habit, foliage and flowers all combine to make Sophora japonica a most excellent tree for planting in pleasure grounds. *T. H. Everett.*

ORCHID NOTES AND GLEANINGS.

BLETIA SHEPHERDII.

THIS somewhat scarce Orchid is commendable for the rich colour of its flowers, and for its elegant habit of growth.

The pseudo-bulbs are roundish, about two inches in diameter; the leaves broadly lanceolate, fifteen to twenty inches long, deciduous; and the scapes longer than the leaves, branched and many-flowered. The height of the plant, when in flower is from two feet to three feet. The flowers are about one-and-a-half inch in diameter, of an uniform, rich purple shade, with the lamellae or ridges of the lip, white; the sepals are oblong, acute, the petals somewhat broader, and undulate. The lip is broad, cuneate, the front lobe undulated, while the disc displays five to seven wavy lamellae.

B. Shepherdii usually flowers in summer, and was introduced by Messrs. Shepherd, of Liverpool, from Jamaica, in the early years of the nineteenth century. The species grows most luxuriantly in the warm house, and should be potted in a compost of fibrous loam, leaf-mould, broken crocks and sand, ample provision being made for free drainage. This terrestrial Orchid will, naturally, rest during the winter. *Ralph E. Arnold.*

ANGULOAS.

ANGULOAS form a small group of Orchids highly prized on account of their large and handsome flowers. Botanically, the genus Anguloa has a close affinity with Lycaste, with which it has been crossed, thus creating the bigeneric Angulocaste. The great attraction in the flowers of Anguloas is the rocking lip, hence the popular name of Cradle Orchid.

Anguloas are among the most tractable of Orchids, and should be potted in a compost of two parts peat and one part good fibrous loam, with some live Sphagnum-moss and silver sand added to keep the whole porous. This compost should be placed over a drainage of clean crocks arranged to fill from one-half to two-thirds the depth of the pot.

The best time for potting is when new roots begin to appear from the base of the pseudo-bulbs; this is soon after the flowering period is over. An intermediate temperature suits Anguloas, and they delight in a decided rest when they have finished their season's growth. After potting, water should be applied moderately, gradually increasing the supply as the new growths gain strength, again diminishing the quantities as the pseudo-bulbs and leaves mature.

Anguloas occur in the Andes of South America, at 5,000 to 7,000 feet elevation, from northern Columbia southwards to about 10° south latitude in Peru; they are found growing chiefly on damp, moss-covered rocks and often in shady woods.

A. Clowesii is the best known species and has very fragrant, golden-yellow flowers, with a whitish lip; the flowers are produced in the spring months. This species received the First Class Certificate of the Royal Horticultural Society on June 12, 1894.

A. eburnea, sometimes classed as a variety of the preceding, produces white flowers, slightly spotted with pink on the lip; it also produces its flowers in the spring, but received a F.C.C. on September 11, 1883.

A. Ruckeri has several varieties, namely, A. Ruckeri alba, and A. Ruckeri sanguinea, the varietal name describing the colour of their flowers. A. Ruckeri has yellow, crimson-spotted sepals and petals, and a crimson lip, and is a most attractive species.

A. uniflora, the species upon which the genus was founded, first appeared in 1844, when a plant flowered in Mr. Barker's collection at Springfield, Birmingham. There are several varieties also of this species, known as A. u. alba, A. u. splendens and A. u. Turneri, and each has received the hall mark of a good Orchid at different times.

Anguloa Cliftonii is a remarkable species from Columbia, having lemon-yellow, pointed sepals and petals, with some dark claret colour at the base of the latter; the lip is tinged with cinnamon and the column is white, spotted with purple at the base; this received an F.C.C. on January 25, 1910, when shown by Messrs. Charlesworth and Co.

A. intermedia, a hybrid raised between A. Ruckeri and A. Clowesii, raised by Mr. Seden for Messrs. J. Veitch and Sons, and by Mr. J. C. Bowring, of Forest Farm, Windsor, also appeared as an imported plant in the collection of Mr. R. H. Measures, at the Woodlands, Streatham. The flowers are of the same size and shape as those of A. Ruckeri; the sepals and petals are yellowish-white, externally flushed with rose-purple, cream-white on the inside and densely spotted with rose-purple, the spots on the petals being darker than those on the sepals; the lip is coloured like the petals except that the disc is paler, and the small bifid terminal lobe is spotted with red. This plant remains the only hybrid Anguloa raised in cultivation, and it received a F.C.C. on May 22, 1888, when shown by Messrs. J. Veitch and Sons. *J. T. B.*

CULTURAL MEMORANDA.

WINTER-FLOWERING BEGONIAS.

THE group of handsome, large-flowering, winter-blooming Begonias represented by such fine varieties as Exquisite, Emita, Fascination, Elatior, etc., require very careful treatment from now onwards until they commence growth again towards the end of April. The chief aim should be to induce them to retain their old stems and as much foliage as possible. Some of the weaker-growing varieties are very difficult in this respect, and with them the loss of the old shoots usually means the death of the plant. A temperature of about 55° suits them best during the resting season. Water must be very carefully afforded at the roots; atmospheric conditions are important, as a fairly moist atmosphere will do much towards maintaining the foliage in a fresh, healthy condition, but much care and judgment is necessary in this respect. *C.*

BOUVARDIAS.

THE Bouvardias are very charming and useful flowering plants, which for some unaccountable reason have gone out of favour during recent years. This is somewhat surprising, considering how useful they are for securing a supply of cut flowers, or for furnishing the warm greenhouse during the autumn and winter. Where stocks of old plants exist, a number of them may be partially pruned back and started into growth in a warm house. When the young shoots are three to four inches in length they should be secured as cuttings; they will root readily in a warm propagating case. Bouvardias may be increased also by means of root-cuttings.

Bouvardias may be grown in pots throughout the whole year, while in the more favoured parts of the country they may with advantage be planted out-of-doors during the summer months. During the growing season they require frequent stopping to induce a bushy habit. They are very subject to attacks of mealy bug and Begonia mite; the former can be controlled by the use of an approved insecticide, while the latter may be disposed of by the use of the sulphur vaporiser. *J. C.*

ALPINE GARDEN.

LUPINUS LEPIDUS.

APPARENTLY discovered by David Douglas, Lupinus lepidus is a low-growing plant formerly found in abundance from Fort Vancouver to the Great Falls of the Columbia River, and generally found on the dry, elevated banks of streams. It is probably the smallest of North American species, and although not common in gardens, it is by no means difficult to cultivate. The purplish-blue flowers are produced in erect racemes that are about four inches long. The stems are silky, and the young leaves also have silky, white hairs, often on both surfaces. The illustration (Fig. 40, p. 63) shows that Lupinus lepidus makes a showy and interesting plant for the rock garden. Just about one hundred years ago (May 1, 1828), the species was figured in the *Botanical Register*, t. 1,149, and the author states that the "drawing was made in the Garden of the Horticultural Society in September last." *C.*

SISYRINCHIUM GRANDIFLORUM.

DURING the bright days of February, the lover of gardens is delighted with the appearance of the drooping, satin-like bells, borne above the slender grass-like foliage of this Sisyrinchium. I think it is especially charming after a slight fall of snow, when the virgin purity of the snow lends additional fascination to the flowers. There is a rare white variety, S. grandiflorum album that, though attractive, is less lovely than the type, with its rich purple blooms.

Many people seem to be unsuccessful in growing this plant, but, with a little attention to its preferences, S. grandiflorum is likely to do well, as it is very hardy and rapid in growth under suitable conditions. It is frequently divided and sub-divided to such an extent that large plants are scarce, and it takes a while for a single crown, such as is generally received from the nursery, to reach noticeable proportions. This lovely spring Satin Flower prefers a shady place in peaty soil or leaf-mould, to which a little loam and sand has been added.

COTYLEDON SIMPLICIFOLIA.

THE Cotyledons have suffered greatly in the past owing to certain members of the genus being more or less of biennial habit, but lately we have come into possession of some which are both perennial and attractive.

One of these, which I grew for several years, but which I lost during the upheaval caused by the removal to another home, but which I hope to replace, is Cotyledon simplicifolia. It was bought with some measure of doubt, but the result was such as to recompense one for its small cost, and for the room it occupied. It is a quaint-looking plant with simple leaves and drooping heads of light, golden-yellow flowers, produced in June, on five-inch stems.

Its appearance would suggest a dry, sandy soil and a sunny place, although with me it flourished in partial shade.

POTENTILLA TONGUEI.

IT is long since the writer first made acquaintance with the charming little Potentilla known as P. Tonguei in the garden of an amateur who had a collection of alpines in the days when collectors of such plants were few and far between compared with the number at present.

P. Tonguei remains a favourite. It is understood to be of hybrid origin, and if one dare hazard a conjecture, it would be that P. aurea and P. nepalensis had a share in its parentage. It has been well-described as "a charming rock plant." It grows about four inches high and has wonderfully large and beautiful flowers of apricot, with a crimson centre which adds much to the attraction of this little alpine. P. Tonguei grows in any good, light soil and I have cultivated it successfully in both sun and partial shade. It is not a very rapid grower, but may be increased by division in early spring or autumn. Its flowering period is from June until September. *S. Arnott.*

SELLIERA RADICANS.

REFERRING to the note on Stellaria radicans on page 24, I fear that a mistake has crept in somewhere. Pretty as the Stitchworts undoubtedly are, in some sunny hedgebottom in spring and early summer, not one of them is really worthy of cultivation, and it is difficult to visualise them in a moraine among the elite of the high alpine flora. Stellaria radicans, as I knew it in the past, had white flowers and made rather untidy tuffets from six to nine inches high, and I am glad to see the writer of the note states: "This is not the plant described in many works of reference, but it is mentioned by Farrer in his *English Rock Garden.*" On looking up Farrer's work, I find that he mentions the name Stellaria radicans, but without any undue enthusiasm, and he certainly implies that the flowers are white.

Having suffered a good deal from faulty

nomenclature, and particularly from careless spelling of labels in nurseries and private collections, I would suggest that the plant seen was perhaps Selliera radicans, a plant lately introduced from the Andes by Mr. Comber, and now considered to be more correctly styled Hypsela radicans. This is a low-growing plant which, being new and little known, many keen gardeners would relegate to the moraine, although such ultra conditions are not really necessary.

Selliera (or Hypsela) radicans belongs to the Natural Order Campanulaceae and under the name of Selliera would come into the group of Goodenovieae, bearing, in fact, a strong likeness to the plant seen here and there as Goodenia repens, which, however, bears white flowers, and is of a looser-growing, less tufted habit. The species has soft-mauve flowers, which are deeply cleft and might, on a very casual glance, suggest a mauve Stitchwort, but on a little closer examination it becomes at once evident that we have here a plant allied to Pratia and Lobelia, and the pretty little Laurentia tenella—all plants of the Lobelia group of the Natural Order Campanulaceae. To anyone who has seen the little bushling, Daphne-cousin from Tibet, Stellera, labelled Stellaria, and who has heard of that now almost classic mistake which cited Hypericum lysimachioides as Hypericum Lizzie McQuoid, and gave Cerastium tomentosum as Rostrum tormentum, it will appear feasible enough to find Selliera radicans changed to Stellaria radicans. *W. E. Th. Ingwersen.*

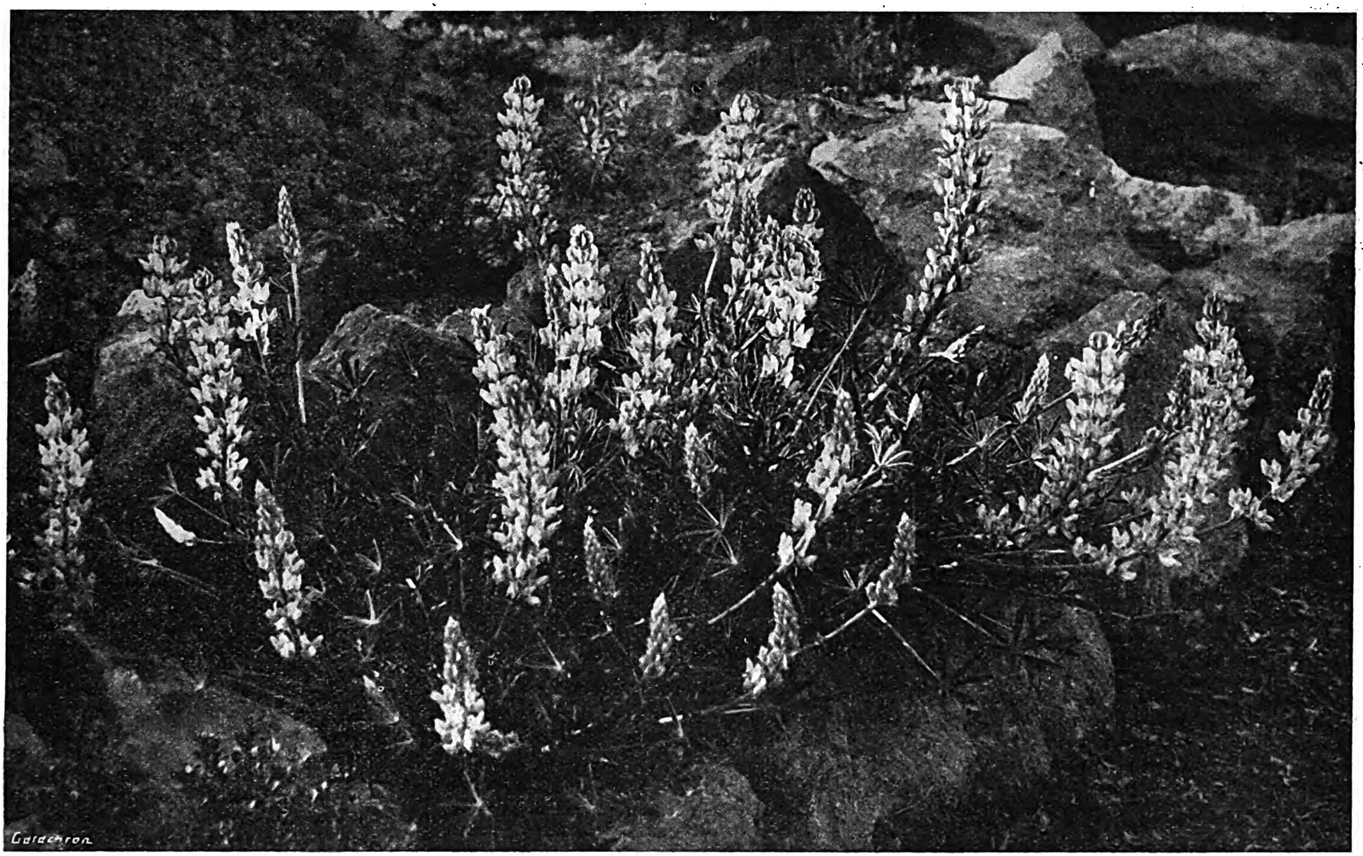

FIG. 40.—LUPINUS LEPIDUS.

A REVISION OF VIOLAS.

(*Continued from p.* 48).

VIOLA PALMATA, L., is figured in *Bot. Mag.*, t. 535. The leaves are easily recognisable from those of V. pedata by reason of their being toothed or cleft into from five to eleven lobes, of which the middle one is considerably the larger; but in the region of the Great Lakes a form occurs in which the lateral leaf-lobes are linear with a cuneate base, and in this case the leaf is not very different from certain forms of the polymorphic V. pedata. The blossoms are in all cases, however, very distinct—those of V. palmata being violet-purple, and those of V. pedata lilac, with the two upper petals deep violet (or all lilac in the commoner concolorous form) with conspicuous orange stamens. V. palmata frequents dry, rich places in hill woods, and has a wide distribution—from Massachusetts to Minnesota, and also south along the Alleghany range to Florida. It has numerous hybrids with other American species of the same section. It is popularly known in its native land as "Chicken-fighters" or "Roosters," or again, the Old English sobriquet of V. tricolor, "Johnny-jump-up" has been borrowed for V. palmata. It is one of the best of all Violets, and presents no difficulties in cultivation, being a luxurious grower. It was supplied, at least until a year ago, in small quantities by one English nursery, and it was supplied by a French firm at about the same time; but it is now difficult to procure, although it would appear to be a valuable plant for re-introduction.

V. palustris, L., is a stemless Violet, and one of the most widespread of all. In Europe it extends from Greenland to Iceland (where it is common), and thence to England and north and middle Russia, but it is absent in southern Europe, the Caucasus and all Asia. It reappears in Alaska and Labrador, and goes so far south as the summits of the White Mountains of New Hampshire in the east, and also descends the Rockies into Washington and Colorado. The blossoms are pale violet, sometimes white, lined with dark striations. The upper petals are recurved, giving the flowers the round appearance which Farrer mentions. Though native to parts of England, I have found it quite difficult to procure, even from nurserymen specialising in native plants. V. nephrophylla, which Farrer writes of as an improved cousin of V. palustris, has no connection with it.

V. papilionacea, Pursh, has, like V. palmata, by some strange association, borrowed its popular American name "Fighting Cocks," from the poultry yard. In 1897 in the first edition of Britton and Brown's *Illustrated Flora*, it was described as V. obliqua, Hill—an error corrected in the 1913 edition. The name V. obliqua has been at one time or another used for so many different American species that it has now been abandoned; but the possession of the first edition of Britton by some private gardeners has perpetuated the name. The specific name, V. papilionacea, is derived, not from the butterfly, but from the Natural Order of Papilionaceae, which is the Continental equivalent of the British Leguminosae, and from the fact that the shape of the flower resembles that of the garden Pea in having the lower petals boat-shaped. The two upper petals are reflexed. All are deep violet (though sometimes all white), and are greenish-yellow (rather than white) at the centre, and as they are bearded they appear to be covered with yellow down. It is a plant which, like some European alpines, frequents the neighbourhood of dwellings—a fact which was responsible for its synonym, V. domestica, Bicknell, and which may also point to a liking for rich feeding. It grows also on the American prairies—whence another synonym, V. pratincola, Greene. Generally, it is most abundant in moist fields and groves. It is very widely distributed over the eastern part of the United States—from Maine west to Minnesota, and south to Georgia and Oklahoma. It is extremely abundant on an island in the Potomac River. Some of the white forms are cultivated in America for cutting purposes. Another, called V. Priceana, Pollard, and also V. confederata, is interesting, as in Arkansas it is known as the Confederate Violet, since its grey petals and purple centre reproduce the colours of the Confederate uniform in the American Civil War. This is said to be in America a fine, and hardy garden plant. I was lucky enough to get a few seeds of this from M. Correvon, after his recent lecture tour in the United States, and it is still more lucky that the seeds have resulted in a number—a very small number—of plants. V. papilionacea appears to be a most uxorious species—not that any Violets are backward in this respect—and is known to have been responsible for more natural hybrids than any other Violet, excepting V. sororia. *E. Enever Todd, Lt.-Col.*

(*To be continued*).

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MR. F. KINGDON WARD'S NINTH EXPEDITION IN ASIA.*

XXIV.—IN ZAYUL.

It was a very great relief to me to reach the Lohit, after all that coil on the pass; I felt we were already in Assam. In July, Sadiya, which the Mishmis had said truly enough was fifteen marches down the valley, seemed ridiculously close. Alas! after being held up in Kahao for twelve days, Sadiya seemed as remote as Belgravia, and as desirable!

The first delay was caused by the lack of coolies. It was hardly fair to send my own men back to the hot spring for the remaining loads, at any rate not until they had had a rest; moreover, four men were not enough, it required six or seven, and Kahao's quota was two, or possibly three. I wanted men to start next day, and, of course, that was impossible. Messengers were sent up and down river, but without success; villages here are few and far apart, and consist of two or three huts at most. Moreover, at this season nearly every man was away on business of his own.

Another delay was caused by bad weather, which started again on November 12. The very evening we arrived I noticed that the sky looked muddy, and though next morning the sky was clear, and the sun shone brightly, the temperature fell only to 38·5°. In the afternoon a violent gale sprang up, exactly as in July, but instead of blowing itself out by sunset, it continued far into the night, and with the lull came rain. The storm continued for a week, and though the symptoms in the valley were slight—dirty skies, some rain mostly at night, and blustering winds, it was certain that there had been a serious relapse in the mountains. By the 16th, the minimum temperature had risen to 44·5°, and the wind had risen to gale force. All this made it difficult to dry my seeds, of which I had a large number now spread out on sheets of paper; the wind used to leap up so suddenly that we had to be very vigilant. As it was, some seeds got mixed, and some were blown away. However, I went steadily on with the packing and cataloguing, always the most boring job.

Almost every day Tibetans from Rima or Mishmis from down river, arrived at Kahao, and they always came to see me; but they had their own business to attend to (every man, woman and child carried a load), nor could I persuade them to mine.

For the first day or two I was content to wait patiently; I was told that coolies would arrive presently. But when three days had passed, and four, and five, and still there were none, I was desperate. We might stay here for ever at this rate. Thanks to the length of time occupied since leaving our camp on the other side, and having to feed my loyal coolies, rations were now finished. How was I to feed my servants on the march to Sadiya, remembering that the Government had warned me I could get *nothing*, and *must* be self-rationed? Not that I believed that, literally; still I had to bear it in mind, as it was probably related to the truth. So I set about purchasing some Rice (it took several days to accumulate about 40 lbs.), and I also shot several pigeons and bought some fish and some pork.

By the evening of the 15th, I had persuaded my four loyal coolies and three or four Tibetans to return to the hot spring for the loads. They were to start next day, and would be back in six days. That was something, and they left next morning according to programme.

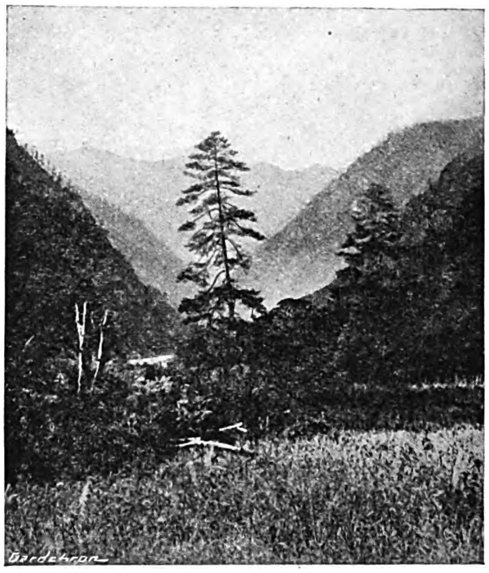

FIG. 41.—THE LOHIT VALLEY, NEAR MINZONG.

Cultivated land in the foreground.

During the next few days I did some collecting though there was not much in flower. Also I had a bad attack of toothache, to beat off which I mobilised all forces, including whiskey, morphia (there was very little of these, unfortunately!), chlorodyne and aspirin; the latter proved the most efficacious.

Amongst a few shrubs in flower were Strobilanthes, Senecio, Ceratostigma Griffithii, several Labiatae, etc. There were Orange trees, laden with ripe fruit in the village, and I noticed an Ilex in the thicket of hoary, leather-leafed bushes. It was interesting also to see young plants of Pinus Khasya springing up on the stony terraces which had once been cultivated, though apparently long since abandoned to grass and Bracken.

Before the coolies got back, the weather turned fine again, with hoar frost on the grass each morning, and the minimum just below freezing point. The coolies returned on the evening of the 21st, and I was comfortable once more. They reported deep snow at the hot springs, and said they had had a bad time; I wanted to go on the very next day, but feared the coolies would refuse. They did; so we stayed over the 22nd, and then the 23rd, till I was almost beside myself. However, by the evening of the 23rd everything was arranged. The Tibetans would start next day and take me so far as the rope bridge, where we had to cross the Lohit; my own coolies were willing to go so far as I cared to take them! This satisfactory conclusion was not arrived at without a certain amount of adjustment; I had to lighten the loads, by jettisoning everything I could do without; I had to continue to carry my own load of nearly 40 lbs., and my two servants had to carry full coolie loads; finally, I had to pay the coolies double wages. But though I was indignant at such bare-faced profiteering, I was so joyful at the prospect of starting for Sadiya that it did not rankle.

That night a revel was held in the one inhabited house of Kahao, and singing continued till the small hours. I was too excited to sleep much, and we were all abroad before dawn—a still, sharp, clear morning.

After infinite delay we started, and before long Kahao was out of sight. At first the going was easy enough, across the paddy terraces and cultivated fields, where humped cattle were ploughing—I was unable to obtain any milk though, from these degraded, Rice-eating Tibetans! Then came cliffs, with awkward traverses, and a nasty bit over boulders in the river bed itself, and then long stretches across Pine-clad terraces, where it was dead easy again. Luculia gratissima was massively in flower on the sun-scorched cliffs, and a jumble of trees and shrubs—Hydrangea, Alnus, Quercus, etc., filled the gullies. In the river bed Pyracantha was in fruit, and on the hillside, Ailanthus decked itself in orange and scarlet. Buddleia I also noticed, and a crouching Ficus in the deep ditches which scored the grassy flats. There were a few succulent plants on the cliff, species of Sedum or Crassula, I suppose, also Didissandra lanuginosa, Euphorbia, a few stunted bushes of Ceratostigma, and Ficus. The violet Strobilanthes was fairly common, also various Compositae, including an Aster. Here and there grew tangles of Clematis, certain twining Papilionaceae, Lygodium, etc. In fact, the flora is by no means a poor one, although the valley does give the impression of being arid; the truth is the flora is rich enough, but it compares badly with the Indo-Malayan extravagance lower down the valley, or with the Himalayan wealth higher up the mountain.

The coolies recommended me to camp soon after three, saying that there was a difficult cliff ahead, but I urged them to go on as we had not sufficient food to permit us to waste time. So on we went, but the cliff really was difficult, and it was almost dark when at last we reached the next flat, and halted by a stream under the Pine trees. We made big bonfires, had supper, and slept as we were, beneath the starry sky. I was surprised at the great size of these Khasya Pines—many must have been 150-170 feet high, and some may be reached 200 feet; they were of considerable girth, tall and straight as a dart, unbranched for fifty feet or more.

We were up and away betimes on the 25th. An hour's march brought us to the Dati Falls, where a stream leaps 3,000 feet in two cascades; but there was not sufficient water coming over the cliff to make it impressive. Afterwards we crossed two big streams, and ascending a high Pine-clad mound, obtained a good view northwards, up the empty valley, and saw the rope bridge down below us. We reached the crossing place about five, and camped in some Rice fields. Trees and shrubs were beginning to appear in greater variety now: Acacia, Ash, Desmodium, Ficus Cunia, Osbeckia, etc., and from now on, the Pine trees began to dwindle in numbers, or to climb higher up on to the cliffs, leaving the bottom of the gorge to Indo-Malayan species.

Practically the whole of next day was spent crossing the river by the rope bridge, a devilish contrivance across which one was slowly hauled with jerks; it was eighty yards long and fifty feet above the racing river. When we and the kit were all across, we marched about a mile and camped again for the night. The Kahao crowd returned from here, and I took on some new rascals.

On the 27th we finished a good march, mostly through thick forest, where Palms, Pandanus, Tree Ferns, Engelhardtia, Skimmia, and new species of Oak and Ficus appeared for the first time. In flower was a white Begonia, also Crawfurdia. Amongst a number of lianas I noticed Entada, and the violet Strobilanthes grew much more rankly here. In short, the valley had changed its character. It was narrower, with closely overlapping spurs which dipped right down to the water, leaving no room for those Pine-clad terraces which are such a feature of the upper valley. Clearly, the upper valley was made in two distinct stages, the present deep trench in which the river flows having been cut in the floor of a wider valley, of which the terraces are the remains. During the second half of the march we left the Tibetan province of Zayul, and definitely entered the Mishmi Hills, which are British territory, though unadministered. Also we noticed a large boulder on which was carved very neatly, the following inscription:—

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* The previous articles on Mr. Kingdon Ward's Ninth Expeidtion in Asia were published in our issues of August 14, 28, October 9 and November 20, 1926, and January 1, February 19, March 5, 19, April 9, 30, June 4, 18, July 30, August 20, September 10, October 1, 15, November 5, 0, December 3, 17, 21, 1927, and January 14, 1928.

5th Coy. 1st K.G.O.
Sappers and Miners,
1912.

This was the furthest point up the Lohit reached by the expedition of 1912, which came up the valley to block the rumoured Chinese advance from Rima. Had it not been for the war, we might have had a permanent post at Walong, by the rope bridge. As it was, we had to draw in our tentacles all round the frontier.

Next day we reached the first Mishhmi village at midday, and as we had to change coolies here, it was necessary to halt till the 29th. I was promised fifteen coolies, however, which not only enabled me to send back the four I had brought from the Seinghku, but also allowed me to relieve both my two servants and myself of our loads. This was a great advantage. *F. Kingdon Ward.*

IDEAL GARDENS AND PLANT LORE.

The Garden of Venus.

Were it not that many of the plants have been lifted from our Venus Garden and transplanted into that of the Virgin, thus becoming reputable, we should have to regard the present subject as suitable only for such as have a pagan strain in their horticultural predilections. But since there must be many who appreciate the splendid gifts of Greece and Rome to our garden lore, whether practical or sentimental, a place must be found for Venus in near neighbourhood to Mary. The one was to pagan, what the other is to papal Rome, and the liberal-minded student will give each its rightful place. Every religious system has contributed its quota to the sum total of our faith, and we are debtors alike to Greek and Roman, Jew and Gentile, follower of Venus and devotee of the Virgin.

Venus was the Goddess of Love. She has been dethroned, and many seem never to have found another to fill her place. As we cultivate the plants dedicated to her service or memory we may well seek at the same time to cultivate the virtue which she was supposed to represent. A happy world would this become if Love regained her rightful place. Her Greek prototype was Aphrodite, after whom certain plants are named Aphrodisiac. Venus owed much of her popularity to the fact that she was identified with the Greek goddess, and the two should be thought of together when the plant lore of the Roman deity is under consideration.

We shall first place in our Venus Garden a choice specimen of the Myrtle, a plant which frequently thrives well in the open air in the south of England. One of her names was Venus Murtea, and this was said to be the same as Myrtea or Myrtus, the Myrtle, indicative of the fondness she expressed for that shrub or tree. In ancient times a Myrtle grove is said to have been planted around her sanctuary below the Aventine in Rome. A great deal of lore and legend may be culled from the authorities linking Venus with the Myrtle, a plant which had the power both to create love, and what is more, to sustain and perfect it. Chaplets of Myrtle were worn by her attendants, and the goddess herself wore a chaplet of the same when awarded the Golden Apple by Paris.

By the side of the Myrtle will be placed an Orange. It may be planted in a tub, if needs be, so as to preserve it during the winter. This we take to be the Golden Apple of the mythologists, about which volumes have been written. It will recall the tradition that Venus gave the fruit to Hippomenes, thus enabling him to win the race with the fleet-footed Atalanta. Spenser tells us that it was the bestowal of this Golden Apple upon Venus which led to the Trojan war. Some may, however, prefer to plant an Apple which produces golden fruit, if the culture of the Orange is impossible, for we are fain to confess that no one can say with absolute certainty what the Golden Apple was. It may have been the Quince.

The Rose, pre-eminently the flower of love, will naturally come in for early consideration. It is inseparably linked with the names of Venus and Adonis, and two bushes, the one yielding pure white blossoms, and the other flowers of deepest crimson, will be selected. The Rose was originally white, but when Venus was hastening to the aid of Adonis she inadvertently trod upon the thorns. Her cry of pain made the Rose blush, and it has been crimson ever since. Another legend says that it was her blood which dyed the flower and gave it the rich colour it now displays.

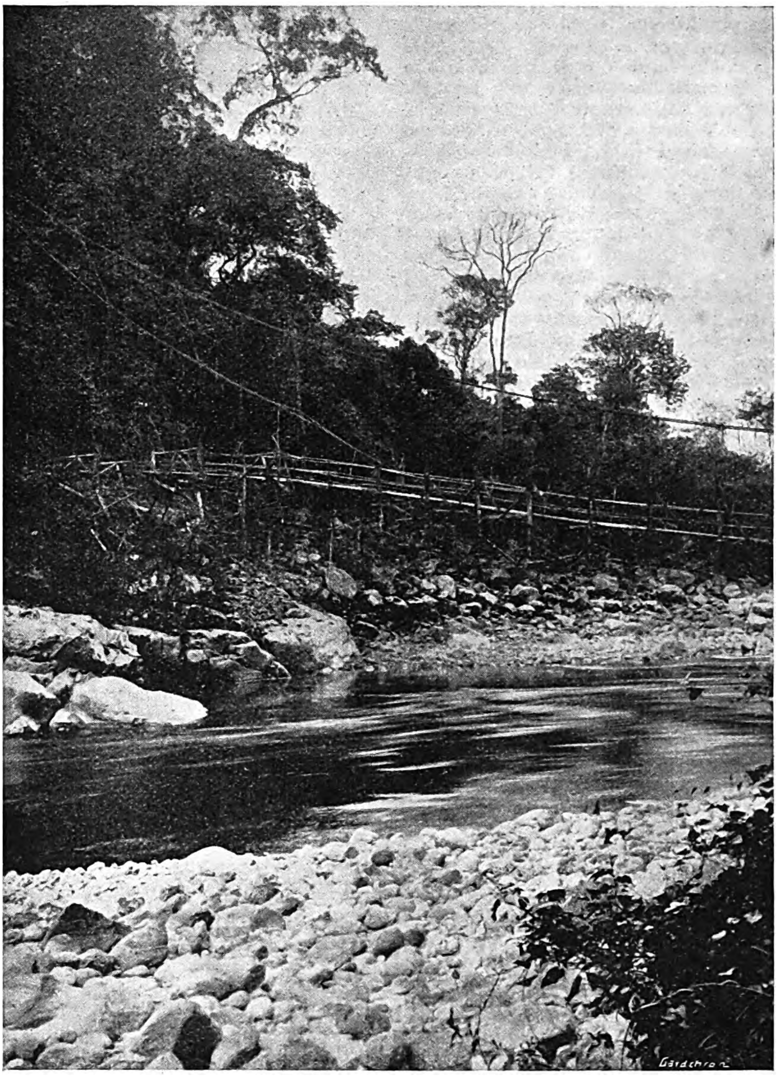

FIG. 42.—REMAINS OF SUSPENSION BRIDGE OVER THE DOU RIVER, LOHIT VALLEY.

The Anemone will be made welcome. It was highly esteemed by the Romans and Greeks, by whom it was made into wreaths to adorn the brow, and was held sacred to the Goddess of Love. Under the name of Venus' Tree, we may also introduce the Yarrow. This plant is rich in folk lore. Young ladies may be glad to know the secret by means of which the future husband may be seen in dreams of the night. Sew an ounce of Yarrow in a piece of flannel and place it under the pillow on retiring to rest. Then repeat the following lines:—

> "Thou pretty herb of Venus' tree,
> The true name it is Yarrow;
> Now who my bosom friend must be,
> Pray tell thou me to-morrow."

This brings us to an enumeration of a few of the plants which are not only dedicated to Venus but also bear her name. One of the best-known names, albeit the plant itself is not often seen in this country outside the conservatory, is the Venus Fly-trap (Dionaea muscipula). In an interesting letter to be found among the correspondence of Linnaeus, dated 1768, Mr. Ellis drew the attention of the great botanist to the peculiarities of this insectivorous plant, concerning which this journal has had much to say in earlier issues.[*] A plant easy to grow, and ever welcome, is Venus' Looking-glass, from the old Latin name, Speculum-Veneris (Specularia Speculum). The legend runs thus. In one of her terrestrial rambles the Goddess lost her mirror, which was found by a shepherd. Cupid, fearing the consequences, obtained the speculum and broke it to pieces. The fragments were then converted into those bright blossoms which have ever since been named Venus' Looking-glass. To the Teasel, or Teazle, has been dedicated the name of Venus' Basin, the Latin Veneris labrum. This is in allusion to the water which may usually be found collected in the hollow formed by the united bases of the leaves. It may be remarked that the water is often found to be full of insect life. In all probability nitrogen is obtained in this way for the maintenance of the plants' vigour.

Though not a handsome plant, the Shepherd's Needle must be introduced. It is a plant of many names (Scandix), one being Lady's Comb, from its being dedicated to the Virgin, while another is Venus' Comb, for its consecration to the predecessor of Mary. As Prior remarks, the names are in allusion to the slender tapering beaks of the seed-vessels being set together like the teeth of a comb, a point which finds mention in Pliny's *Natural History*, as do also several other plants. The Vervain, for example, was dedicated to Venus on account of the erroneous derivation of the name. It was popularly supposed to be from two words meaning Herba Veneris, or Herb Venus. Mint, likewise, was Venus' Crown, or Veneris corona. Very pretty are the names Venus's Doves, or Venus's Chariot drawn by two Doves, as applied to the Monkshood (Aconitum Napellus, L.). "The two long-stalked upper petals," states Britten, "are concealed in the hooded sepal. When the hood is pushed back these petals protrude, and are supposed to resemble doves, the flower representing the chariot."

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[*] See, for example, *Gard. Chron.*, April 29, 1874, p. 260.

The old Latin name for Pennywort (Cotyledon Umbilicus, L.) was Umbilicus Veneris, which gives us Venus' Navelwort, an epithet which is sometimes applied to a species of Hound's Tongue (Cynoglossum officinale, L.). Nor must we overlook Venus's Hair, which is the translation suggested by Turner long ago for one of our Ferns (Adiantum Capillus-veneris, L.), which was formerly dedicated to Plutus. Another name found in gardening books is Venus's Sumach (Rhus cotinus), while we might add that the Campion (Lychnis) and the Corn Cockle (Lychnis Githago) are stated by Professor de Gubernatis to find a place among the flowers of Venus. Quite a number of other plants must be added if we are to include all those which have been dedicated to the Goddess of Love in other lands. Germany not only has Venus-bad for the Teazle, Venus-haar for the Adiantum, and Venus-kamm for the Shepherd's Needle, but also Venus-blume for the Orchid, Venus-finger for Hound's Tongue, and Venus-siegel for Herb Paris, so that our garden may be enriched by borrowing from this source.

It is very clear that a goddess who could secure so large a number of dedications must have been held in high esteem, although the Virgin Mary easily outshines her in the matter of plant names. *Hilderic Friend.*

PLANTS NEW OR NOTEWORTHY.

Some New Siamese Begonias.

The circle of Puket in the south-west corner of the peninsular area, and more particularly the Langkawi Islands in that circle, seems to be the only part of Siam from which species of Begonia have been recorded as being introduced to cultivation. Three additional regions of Siam are represented by the five plants described here as new species.

B. Putii comes from Doi Chiengdao, a mountain in the north of Siam between Chiengmai and the Shan country; B. Grantiana and B. grata are from the south-east area, the former from Kaw Chang, an island just off the mainland practically at the eastern limit of Siam, and the latter from Kao Soi Dao, a hill in the mainland, inland from Chantabun; B. murina and B. notata both come from the eastern side of Peninsular Siam, the former from Sisawat, near Kanburi in the circle of Rachaburi, and the latter from Ta Ngaw, near Chumpawn, in the Surat circle.

The plants were grown from seeds or tubers received at Aberdeen from Dr. A. F. G. Kerr. Except in the case of B. Putii, where the tubers were gathered by his native collector (Put), all the seeds and tubers were collected by Dr. Kerr. So far, all the plants have been given stove treatment, but they would possibly all thrive in lower temperatures.

Of the five species described, B. murina and B. notata are closely allied, and both should form welcome additions to cultivation. Both are floriferous—the flowers being medium-sized, white, faintly tinged with pink. Both produce numerous, small tubers at the roots and larger stem-tubers in the leaf-axils. Their chief attraction lies not so much in the flowers as in the foliage. The leaves are dull, pilose on both surfaces, rather paler in B. murina, and marked with red on one or both surfaces along the veins. Producing but a short stem, the plants form compact, neat and pleasing foliage specimens. B. murina received an Award of Merit when exhibited at the Royal Horticultural Society's show here last year.

The remaining three species differ markedly from the others, in the more or less shining upper surface of their leaves, in their sparser indumentum which is not of the pilose type, and in the absence of tubers in the leaf axils, but again all are desirable acquisitions to cultivation. B. Grantiana and B. Putii are tuberous plants, but B. grata has a creeping rhizome.

In both foliage and flowers B. Grantiana must be given precedence over the other two. The thickish leaves are dark green and glossy above, red below, and strongly auricled on one side at the base. The flowers are rather below the medium size, but the pale perianth has the veins sharply marked out in pink. The pale green ovary also has similar pink veins.

B. grata has larger green leaves, and larger, much more numerous, white flowers, and with its comparatively short stem forms a compact pot plant.

B. Putii, which will probably prove the hardiest of the five species, has the darker green leaves, red on the lower surface, of B. Grantiana, but has rather larger flowers, and the perianth is suffused with pink toward the margin.

The five species agree in having unequally three-winged fruits, and in the placentae being bifid. In B. grata and B. Grantiana the ovary has only two cells; in the others three cells are present.

In conclusion, it may be noted that B. Grantiana is very readily increased by leaf-cuttings, tubers being formed either at the base of the petiole or along the cut margins of the blade.

Begonia Grantiana, Craib, sp. nov.

Radix tuberosa; caulis brevis, folia pauca (2–5) gerens. *Folia* ovato-oblonga, basi latere uno conspicue auriculata, circa 7 cm. longa et 4 cm. lata, valde inaequilateralia, sat crassa, pagina superiore viridia, inferiore rubra, e basi palmatim 4-5-nervia, nervis lateralibus paucis omnibus supra vix conspicuis subtus prominentibus, supra setulis paucis instructa; stipulae circa 7 mm. longae, membranaceae, pallidae, costa rubra. *Cymae* axillares, pedunculo communi circa 4 cm. longo bracteis deciduis subellipticis 14 mm. longis et 9 mm. latis membranaceis pallidis 7-nerviis, nervis rubris, instructo suffultae; pedicelli 9-11 mm. longi, parcius squamulosi. *Floris* ♂ perianthium 4-merum; partes duae exteriores late ovatae vel subrotundatae, 8-9 mm. longae et 7-8 mm. latae, glabrae, pallidae, nervis circa 8 rubris, duae interiores lineares, exterioribus paulo breviores, circa 2.5 mm. latae, costa inferne rubra. *Androphorum* evolutum, filamentis brevibus, antheris parvis haud appendiculatis, connectivo lato. *Floris* ♀ perianthium 5-6-merum, ei *fl. masc.* simile. *Ovarium* 3-alatum, alis inclusis 11 mm. diametro, alis apice truncatis basi rotundatis sat crassis viridibus rubro-venosis, 2-loculare, placentae lamellis loculo quoque 2; stigmata 4, apice torta.

Cult. Hort. Bot. Aberd. e tub. in Chantaburi ad Kaw Chang a *Dr. Kerr* lectis.

Begonia grata, Geddes, sp. nov.

Herba circa 19 cm. alta; rhizoma repens. *Folia* rotundato-ovata, apice acuta, basi lateribus disparia, cordata, circa 8 cm. diametro, supra viridia, nitentia, parce et breve ferrugineo-puberula, subtus nitentia, minute albo-maculata, ad nervos praesertim prope marginem breviter ferrugineo-puberula, nervis 7 apud apicem divaricatis, margine bidenticulato-serrata, dentibus maioribus et minoribus inter se alternantibus, petiolo succoso rubro terete ad apicem angustiore 12 cm. longo basi 5 mm. lato apice 2.5 mm. lato breve et parce ferrugineo-puberulo suffulta. *Cymae* axillares, pedunculo 15-16 cm. longo brunneo glabro; pedicelli ♂ 2 cm. longi, parce puberuli; pedicelli ♀ 1.5 cm. longi, parce puberuli. *Floris* ♂ perianthium 4-merum, album; partes duae exteriores rotundato-oblongae, obtusae, venatae, 2.2-2.7 cm. longae, 2 cm. latae, dorso parce ferrugineo-puberulae, ventro glabrae, nitentes, duae interiores oblongae, venatae, 2-2.3 cm. longae, 8 mm. latae, glabrae. *Stamina* permulta, fere libera, filamentis circa 2 mm. longis, antheris obovoideis luteis 1.6 mm. longis 0.6 mm. latis, connectivo apice late extenso obtuso. *Floris* ♀ perianthium 4-merum, album; partes duae exteriores rotundatae, venatae, 1.9 cm. longae, 1.6-1.9 cm. latae, dorso parce et breve ferrugineo-pubescentes, duae interiores ovato-obovatae, obtusae, 1.6-1.8 cm. longae, circa 1 cm. latae. *Ovarium* puberulum, 3-alatum, alis 2 inter se aequalibus 8-10 mm. latis, ala tertia maiore 1-1.4 cm. lata, viride, 2-loculare, placentae lamellis loculo quoque 2, breve ferrugineo-puberulum; styli 2, haud connati, 1 mm. longi; stigmata 2, lutea, lunata, contorta.

Cult. Hort. Bot. Aberd. e seminibus in Chantaburi ad Kao Soi Dao, 600 m., a *Dr. Kerr* lectis.

Begonia murina, Craib, sp. nov.

Herba erecta; tubera numerosa, parva; caulis erectus, ad 12 cm. altus, pilosus, nodis inferioribus radicans. *Folia* ovata vel suborbicularia, inaequilateralia, apice obtusa, basi subaequaliter cordata, 4-11 cm. longa, 3.5-10.5 cm. lata, supra pallide viridia, subtus parum pallidiora, pagina utraque nervis marginem versus rubro-notata, nervis e basi circa 8 supra parum impressis subtus prominentibus ad marginem currentibus, nervis transversis supra parum impressis subtus prominulis, supra sparse molliter pilosa, subtus ad nervos molliter pilosa, aliter sparsius molliter pilosa, margine irregulariter crenato-denticulata, ciliata, petiolo 5-15 cm. longo pilosa suffulta; stipulae deciduae, lanceolatae vel late lanceolatae, circa 1 cm. longae, pilosae. *Cymae* axillares, saepissime 5-florae, pedunculo communi 3-6 cm. longo piloso suffultae. *Floris* ♂ pedicellis 2.3 cm. longis breviter pilosis suffulti. *Perianthium* 4-merum; segmenta duo exteriora obovato-rotundata, ad 14 mm. longa et 13 mm. lata, dorso parce pilosa, duo interiora lineari-spatulata, 6 mm. longa, 1.5 mm. lata, dorso inferne pilis perpaucis instructa. *Stamina* numerosa, filamentis glabris inter se liberis, antheris exterioribus parvis interioribus ad 1.5 mm. longis connectivo supra loculos obtuse producto. *Floris* ♀ pedicellis 11 mm. longis breviter pilosis suffulti. *Perianthium* 3-merum; segmenta duo exteriora oblata, 8 mm. longa, 12 mm. lata, alba, apice pallide puniceo-suffusa, dorso parce pilosa, intra glabra, tertio spatulato 7 mm. longo 3.5 mm. lato glabro vel dorso inferne pilis perpaucis instructo. *Ovarium* 11 mm. longum, inaequaliter 3-alatum (alis 1.5-3 mm. latis), parce pilosum, rubro-venosum, 3-loculare, placentis bilamellatis; styli 3, inter se liberi, stigmatibus 6 pubescentibus apice spiraliter tortis.

Cult. Hort. Bot. Aberd. e seminibus in Rachaburi apud Kanburi ad Sisawat a *Dr. Kerr* lectis.

Begonia notata, Craib, sp. nov.

Herba erecta; tubera numerosa, parva, etiam in axillis inferioribus evoluta; caulis circa 8 cm. altus, pilosus, inferne radicans. *Folia* ovata, oblongo-ovata, vel rotundato-ovata, inaequilateralia, apice rotundata vel valde obtusa, basi subaequilateralia, late cordata vel parum inaequilateralia, latere altero rotundata vel late cuneata, altero late cordata, 4.5-9.5 cm. longa, 3.5-9.5 cm. lata, supra viridia, subtus pallidiora, pagina utraque ad nervos saltem marginem versus rubro-notata, supra sparse molliter pilosa, subtus ad nervos molliter pilosa, aliter sparse molliter pilosa, e basi 8-nervia, nervis ad marginem currentibus supra impressis subtus prominentibus, nervis transversis supra impressis subtus prominulis, margine saepissime irregulariter anguste paucilobulata, denticulata, ciliata, petiolo 4-10 cm. longo piloso rubro-suffuso suffulta; stipulae subpersistentes, mox divergentes, lanceolatae, 5-7 mm. longae, rubrae, pilosae. *Cymae* pauciflorae, pedunculo communi circa 5 cm. longo parcissime piloso suffultae. *Floris* ♂ pedicellis ad 3 cm. longis parce pilosis suffulti. *Perianthii* segmenta 4, duo exteriora subrotundata, ad 12 mm. longa et 13 mm. lata, alba, pallide puniceo-suffusa, dorso praesertim inferne plus minusve pilosa, duo interiora spatulata vel lineari-spatulata, circa 7 mm. longa et 2 mm. lata, subglabra. *Stamina* numerosa, filamentis inter se liberis ad 2 mm. longis glabris, antheris interioribus ad 1 mm. longis quam exterioribus longioribus, connectivo saltem interiarum apice obtuse producto. *Floris* ♀ pedicellis 17 mm. longis glabris suffulti. *Perianthium* trimerum; segmenta duo exteriora oblata, 10-12 mm. longa, 14-15 mm. lata, alba, pallide puniceo-suffusa, glabra vel dorso pilis perpaucis instructa, interiore spatulato 8 mm. longo 3 mm. lato. *Ovarium* 11 mm. altum, glabrum, rubro-venosum, inaequaliter 3-alatum, alis apice rectis 5-7 mm. latis basi cuneatis, 3-loculare, placentis bilamellatis; styli 3 mm. longi, e basi liberi; stigmata bifida, longius papillosa, apice spiraliter torta.

Cult. Hort. Bot. Aberd. e seminibus in Surat ad Ta Ngaw a *Dr. Kerr* lectis.

Begonia Putii, Craib, sp. nov.

Herba tuberosa. *Caulis* foliiferus ad 3.5 cm. longus, circa 7 mm. diametro, pilosus, inferne radicans. *Folia* oblonga, subquadrata, vel suborbiculata, lateribus inter se saepissime parum inaequalibus, apice breviter acuminata, basi subaequaliter altius cordata, ad 6.5 cm. longa et 6 cm. lata, pagina utraque viridia vel inferiore rubro-suffusa, superiore medio glabra, marginem versus setulis paucis suberectis instructa, inferiore ad costam nervosque et sparsius ad nervulos rubro-pilosa, e basi 5-7-nervia, nervis secondariis (e costa ortis) utrinque 3, omnibus supra conspicuis subtus prominentibus ad marginem currentibus, margine irregulariter crenato-serrata, petiolo 5-9.5 cm. longo plus minusve rubro-suffuso piloso suffulta. *Inflorescentia* saltem in planta culta e tubere oriens, haud foliifera, pedunculo communi gracili ad 3.5 cm. longo apice furcato bracteis duabus oppositis oblongis circa 5 mm. longis et 3 mm. latis longius ciliatis instructo suffulta; pedunculi partiales 3.5 cm. longi, cum pedunculo communi sparse glanduloso-pilosi, apice bibracteati; pedicelli 2 cm. longi, graciles, virides, pilis glanduloso-capitatis hic et illic instructi. *Perianthii* ♂ segmenta 4; duo exteriora late obovata vel suborbicularia, ad 11 mm. longa et 10-12 mm. lata, alba, apicem versus puniceo-suffusa, intra glabra, extra pilis rubris erectis sat crassis instructa, interiora spatulata, circa 11 mm. longa et 4 mm. lata. *Stamina* circa 11, filamentis ima basi ad 0.75 mm. inter se connatis apice ad 0.75 mm. liberis, antheris oblongis 1.5 mm. longis, connectivo ultra loculos vix producto. *Floris* ♀ pedicellis ad 13 mm. longis glabris vel saepissime parce pilosis suffulti. *Perianthium* 4-merum, masculo simile nisi paulo minus. *Ovarium* crassius pilosum, inaequaliter 3-alatum, apice angustatum, 3-loculare, placentis bilamellatis; styli basi ad 1.25 mm. inter se connati, apice circa 0.5 mm. liberi; stigmata lunata, papillosa, apice haud spiraliter torta.

Cult. Hort. Bot. Aberd. e tub. in Payap ad Doi Chiengdao a *Put* lectis et a *Dr. Kerr* missis. *W. G. Craib, University of Aberdeen.*

A ROSE-LOVER'S LIBRARY.

A large number of interesting and important books on Roses have appeared during recent years, and a few notes on some of these may be of interest.

Roses and Rose Gardens, by Walter P. Wright, published by Headley Bros., the second edition of which appeared in April, 1914, is illustrated with a large number of very attractive, coloured plates. The text covers the whole aspect of Rose-growing, separate chapters being devoted to Planting, Pruning and Training of Roses, and also to the Rose under glass, to the Rose as a Cut Flower, to the Enemies of the Rose, etc. In all there are twenty-one chapters and three hundred pages.

Roses and Rose Growing, by Rose G. Kingsley, is another interesting book which I am glad to have in my library. Like the former volume, it is illustrated with coloured plates, and contains numbers of black and white pictures of Roses, also pruning diagrams. This work has eleven chapters, two of which are devoted to Climbing Roses, one to Tea Roses, one to Hybrid Tea Roses, and one to Hybrid Perpetuals. There are also chapters on Pruning, and Propagating, Rose Pests, and How to Grow Roses for Exhibition. This book is published by Whittaker and Co., my edition being dated 1908.

A very important book for every Rose-lover's library is *Roses: Their History, Development and Cultivation*, by the Rev. J. H. Pemberton. I have the second edition of this work, which was published in 1920, this having a coloured frontispiece, nine lithographic plates, and a number of other illustrations in the text.

The book is divided into two parts, and contains also an introductory section and an appendix. Part I, which is entitled "The Rose," contains six chapters, one of which deals with the Botany of the Rose, and others with Summer-flowering Roses and Autumn-flowering Roses. Part II is entitled "Cultivation," and this contains a dozen chapters. These cover respectively, The Soil and its Treatment, Manures, Planting, Pruning, Budding, Cuttings, Grafting, Layering, Raising Roses from Seed, Growing for Exhibition, Growing Under Glass, etc.

Miss Jekyll's and Mr. Edward Mawley's *Roses for English Gardens*, published by "Country Life," should have a place in every Rose-lover's library. My edition of this important work is dated 1902, and is profusely illustrated throughout. Miss Jekyll is the author of Part I, which is entitled Old and New Garden Roses and Their Beautiful Use in Gardens, while Mr. Edward Mawley wrote the second part, which is entitled Planting, Pruning and Propagating Roses; Exhibiting, Growing Under Glass, etc.

The first part of this book contains sixteen well-written chapters, and the second contains seven. In the last section separate chapters are devoted to Planting Roses, Pruning Roses, Propagating Roses, The Enemies of the Rose, Exhibiting Roses, Roses Under Glass, and to Lists of the Best Roses for Various Uses. Some of the most interesting chapters in the first part deal with Rose Pillars, Rose Arches and Arbours, Roses on Walls and Houses, Rose Gardens, and Roses as Cut Flowers.

A very practical book which I have in my library is entitled *Roses and their Cultivation*, by T. W. Sanders. I have the twelfth edition which contains just over two hundred pages. It is freely illustrated with coloured and black and white plates as well as drawings in the text. Here again every aspect of the subject is covered, and a very valuable section is devoted to Enemies of Roses.

The Rose Book, by H. H. Thomas and Walter Easlea, is another very interesting work. My copy appears to be the first edition, which was, I believe, issued in 1913, and is divided into no fewer than six parts. The beautiful coloured photographs by H. Essenhigh Corke, which form a feature of this book, and of the other gardening books issued by the publishers (Messrs. Cassell and Co., Ltd.), are alone well worth the modest price asked for the volume.

I am very pleased to possess a copy of *Beautiful Roses for Garden and Greenhouse*, by John Weathers. This volume, one of a series of gardening books published by Messrs. Simpkin, Marshall, Hamilton, Kent and Co., Ltd., is beautifully illustrated with thirty-three coloured plates, and in addition to this has several well-executed diagrams in the text. The book contains just over 150 pages, and here again it appears that my copy is a first edition, which was, I believe, issued in 1903.

Apart from the Rose books I have briefly mentioned, I possess a number of others devoted to the Queen of Flowers, some of which are large in size, and others, small. Space precludes notes being given on these, but the titles and authors are briefly enumerated below.

Amateur's Rose Book (Shirley Hibberd); *Amateur Gardener's Rose Book* (Dr. J. Hoffmann); *Book about Roses* (Dean Hole); *Cultivated Roses* (T. W. Sanders); *Hints on Planting Roses* (published by the National Rose Society); *Pictorial Practical Rose Gardening* (Wright); *Rose Amateur's Guide* (T. Rivers); *Rose Encyclopaedia* (G. Henslow); *Rose Fancier's Manual* (Gore); *Rose Garden* (William Paul); *Roses* (T. W. Sanders); *Roses and How to Grow Them* (Edward Beckett); *Roses and Their Culture* (Prior); *Roses for Amateurs* (Rev. H. D'Ombrain); and *Roses in Pots* (Paul).

These are all well worth purchasing and carefully perusing, as examination of copies in new and secondhand book shops will soon show. In order to keep a Rose library reasonably up-to-date a fair proportion of the new works which are published every year should be added, and one often comes across much wanted Rose books, out of print now, in unexpected parts of the country when travelling. *E. T. Ellis.*

NOTICE OF BOOK.

Flowers of Kashmir.

By a fortunate and entirely fortuitous coincidence the first volume of Father Blatter's enumeration of Kashmir plants* comes to hand simultaneously with the arrival in this country of a comprehensive collection of seeds from Kashmir, made by direction of the ruling Maharaja of Kashmir, on behalf of British horticulturists. The ruling princes of the Indian Empire have the reputation of doing things handsomely, and it is clear that no pains or expense have been spared in the collection and preparation of the seeds in question.

At this time of day it is too much to hope for anything very novel in the way of plants from the North-western Himalaya, but many old floral friends from that part of the world have been temporarily lost to cultivation, and they are assured of a warm welcome again. The yellow-flowered Morina, M. Coulteriana, is one of them and many will covet Paraquilegia caespitosa, so cunningly figured on plate 3. The enumeration embraces nine undescribed species of one genus or another—all of them figured—including an Anemone, and some of these may be new.

The volume under notice is the direct outcome of several botanising expeditions Professor F. Hallberg made into Kashmir before his untimely death towards the end of 1924. In one of these expeditions, encouraged and helped by Mr. F. J. Mitchell and Mr. W. S. Millard, the Professor was able to secure the services of a native artist, Haldar J. Walli, and many of the sketch-drawings with which the volume is so plentifully illustrated are reproduced from his drawings. The rest are from the brush of Mrs. Wathen, and the quality of her work may be judged by the frontispiece—a beautiful picture of Meconopsis aculeata. For a work which is definitely "popular," and in which critical discussion has been intentionally suppressed, the illustrations seem to us entirely adequate in that to those not familiar with them they will be of undoubted help in the identification of species. Here and there, as seems inevitable with three-colour reproduction, the colours fail, as, for example, in the illustration on Plate 4 of Delphinium vestitum, Wall., the petals of which should be a deep violet shade. On the same plate the colour of D. cashmirianum is not satisfactory.

The book is not a complete Flora of Kashmir, but "a selection of the more common and more beautiful flowers encountered in that country," and to the many to whom Hooker's *Flora of British India* is an *ouvrage de luxe*, it will be of much practical use. That was the intention of Mr. Mitchell when he asked Father Blatter to undertake the work on Professor Hallberg's death, and horticulturists are much indebted to him.

For a popular work the book is singularly well printed, and the subject matter spaced in most legible fashion. It has evidently been prepared with meticulous care, the indexes of botanical names and popular names are entirely adequate, and misprints are negligible. The second volume will be awaited with interest.

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* *Beautiful Flowers of Kashmir*, Vol. I., by Ethelbert Blatter, S.J., Ph.D., F.L.S. London, J. Bale, Son, and Danielsson, Ltd., 1927. Price 21s. net.

SOME OF THE NEWER AMERICAN ROSES.

The Rose is by far the most popular flower in the United States, and its culture under glass is on an enormous scale. There are more big commercial Rose houses near Chicago than in any other city; the location of the "Windy City" permits of a big shipping trade north, south, east and west, which New York, on the Atlantic seaboard, lacks.

Columbia, which was supreme for several years as a pink forcing Rose has been superseded by Briarcliff, which is rather better in colour but slightly lacking in petalage; however, it does not give so many "bull head" flowers as the older variety does. A Columbia sport, named Rose Hill, introduced by the Hill Floral Products Co., of Richmond, Ind., is a marked improvement on the parent in colour, and it is fuller that Briarcliff. There are a number of other sports coming along.

It seems but yesterday that Ophelia was the leading forcing Rose of its colour, but, while still esteemed as an outdoor variety, it has practically disappeared from under glass since the advent of Madame Butterfly. This latter, in turn, is now giving way to Rapture, introduced by Traendly and Schenck, Rowayton, Conn., last year. The colour is decidedly richer than that of Madame Butterfly. Madame Alexander Drieux has been grown in a small way on account of its striking colour, but Gaiety is proving to be similar in colour and both fuller and freer; the rich bronzy-red shadings of the latter are very attractive. Wilhelm Kordes does especially well in Canada, but is hardly the equal of Gaiety.

The demand for white Roses is small as compared with other colours, and nothing new has appeared to displace the double white Killarney. Templar remains easily the leader amongst the red varieties. Red Premier and Mrs. F. R. Pierson are far less rich in colour.

Souvenir de Claudius Pernet remains easily the most popular of yellow Roses, both out-of-doors and under glass. Other varieties tried, including Fontanelle and Roselandia, have not come up to expectations. The new "Golden Pernet," as M. Julien Potin is being popularly called here, will be largely tried out in the coming season; its colour is fine, and it is less thorny than the original Pernet, which is an advantage. From the Montgomery Co., Hadley, Mass., will come one or more new varieties which growers in the United Kingdom should especially watch for; Talisman especially is of a remarkable colour. Cut blooms have created quite a sensation in the Boston and New York markets. It has not yet been announced when this will be introduced, but probably next season. *W. N. Craig, Weymouth, Mass., U.S.A.*

TENANCY AGREEMENTS ANB LEASES.

When making a tenancy agreement or a lease of a small piece of ground for a short period, the parties frequently consider it unnecessary expense to go to a lawyer to have the document prepared by him, and prefer to settle the matter themselves. This is all right so long as the parties know how the business should be carried through, but should any mistake be made, the consequences might prove very expensive to one of them; therefore it is essential that both should be acquainted with the law on the subject before the drafting of a document is attempted. What is this law?

Dealing first with the preliminary contract (if there is one): A contract for a lease should, under Section 4 of the Law of Property Act, 1925, be evidenced by some memorandum in writing; needless to say, this is not always done, and although if one party refuses to grant a lease agreed upon by a verbal understanding the other party cannot obtain damages for breach of contract, he can in certain cases obtain what is known as specific performance *i.e.*, the Court will order the party in default to make the lease as agreed. If the provisions of the Act are complied with, then either damages or specific performance can be obtained against the defaulting party. Cases where the Act has not been complied with, but where specific performance will be decreed, arise when part performance has occurred, as would be the case when one party has been let into possession by the other; for his presence in possession of the land can only be explained by the supposition of an antecedent contract.

A contract having been entered into, it is now necessary to draw up the document to give effect to that contract; in the case of leases for a longer period than three years, or containing any involved clauses, it is very advisable to obtain professional assistance, and therefore I shall deal only with leases for short terms and with tenancy agreements from year to year which do not contain any complicated clauses. The following rules then apply to agreements for tenancies from year to year and to leases under three years in length.

The lease should commence by stating the day on which it is made and giving the names and addresses of the two parties to it. The landlord should then be made to "demise" or lease the land (describing it) to the tenant for so many years from such and such a day at the agreed rent. If, on the other hand, it is an agreement for a yearly or quarterly (or other period) tenancy, then, after giving the date and describing the parties, the landlord should be made to let the property from such and such a day till the same day next year or at the end of the next quarter (as the case may be) at the agreed rent, which must, of course, be stated. In both cases the days on which the rent is due to be paid should be mentioned.

The second stage in the lease is to set out the covenants which the tenant will have to enter into. The first of these will be to pay the rent as agreed, and if he is to pay rates as well, these must also be mentioned. Next, if there are any buildings on the land, some provision must be made for the repair of these. It is also usual to add a clause (in the case of garden land) requiring the tenant to cultivate and keep free from blight any trees and bushes on the premises, and not to cut down or remove any of them without first obtaining the landlord's permission to do so. There are also usually covenants on the part of the tenant to allow the landlord to examine the property; not to assign or underlet without the consent of the landlord, and to deliver up the property at the end of the tenancy in good condition. There should, in addition, be a covenant to allow the landlord to put an end to the tenancy if the rent is in arrear for twenty-one days, or if there is a breach of any of the covenants by the tenant.

In the case of a tenancy agreement, those of the above covenants which are necessary or appreciate should be stated in the forms of agreements on the part of the tenant. Thus, for example, "the tenant agrees with the landlord that he will cultivate . . ."

After the tenant's covenants comes a covenant by the landlord that so long as the tenant pays the rent and otherwise observes the covenants he shall enjoy the property during the term of the lease without any interruption on the part of the landlord.

A similar clause should be put in a tenancy agreement. In addition, there should be an agreement as to how the tenancy can be ended, such as either party may terminate the tenancy by giving to the other one month's notice (or whatever the period may be) in writing and, say, expiring on one of the usual quarter days. In the case of a lease such a clause is, of course, unnecessary.

Before the document is signed, both parties should be quite sure that they understand what they are going to put their signatures to and get a copy made so that each may have a copy signed by the other. *H. A. S.*

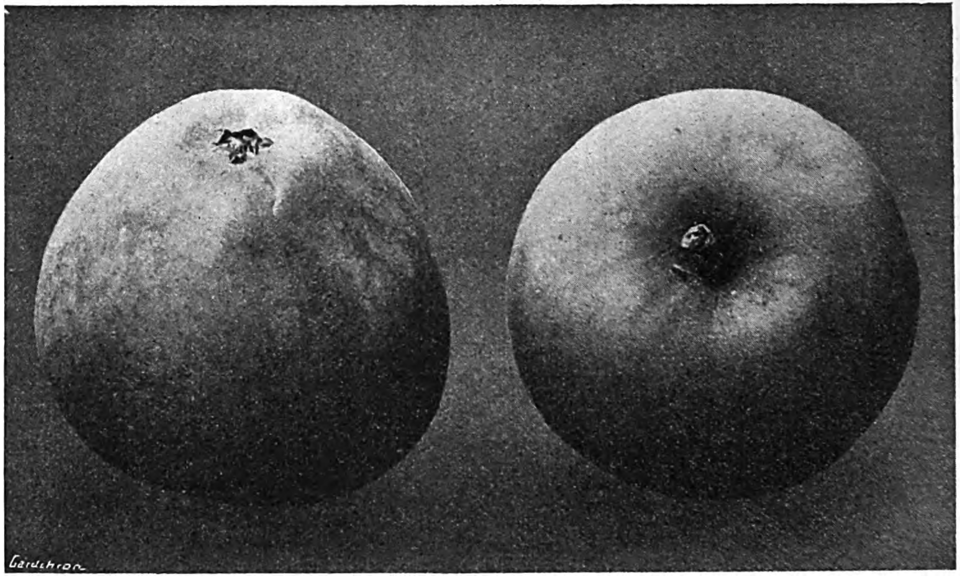


FIG. 43.—APPLE HIGHVIEW PIPPIN.

R.H.S. Award of Merit, January 17. Shown by Mr. E. Hill, High View, Oatlands Drive, Weybridge. (see p. 52).

FRUIT GARDEN.

PRUNING VERSUS TRAINING OF FRUIT TREES.

The object of pruning for production is to obtain in the shortest time, and within a limited area, the largest possible quantity of the best and finest fruits. The object of training may be to produce a tree according to a preconceived idea of shape, irrespective of how it affects fruit production. Both objects are usually obtained by the use of the knife, but the principles involved are somewhat different, and strict formality generally means loss of economy, by the depression of potential production. To use the knife for the sole purpose of forcing the tree to assume a specified regulation form, irrespective of its habit, is to abuse its position as the leading pruning implement.

A tree, when left more or less completely to nature, attains greater size, and may produce more abundant fruits in a given time than when subjected to any form of pruning, but, on the other hand, the fruit is inferior in quality, and is also inferior in quantity, if the extent of surface occupied is considered in comparison to that of a well-pruned tree. The latter occupies less space and bears on practically all its branches, while the former, in most cases, only bears at the extremities of the growths.

If the production of a faultlessly shaped tree demonstrates the skill of the man who handles the knife, it has also the tendency to encourage too severe pruning, and consequently partially destroys potential fertility; in these days of strict utilitarianism, it is production that matters. To assist nature in all things is the golden rule which should regulate all and each of the processes of pruning, and if fruit production is the main point in view, rigid uniformity in shape must be ignored.

Admittedly, espalier and cordon trees produce fruits of excellent quality, but it is a fallacy to suppose that the fruits from bush trees may not be of equal quality; this has been amply demonstrated by the prize-winning collections of Apples at important shows during recent years.

I am convinced that too severe pruning is still practised in some instances, and I have a shrewd suspicion that some plantations have benefited from the fact that a year's pruning has been missed for reasons beyond the control of the grower. That pruning is, and must remain, an integral part of fruit culture, is beyond question; complete success cannot be achieved without the use of pruning tools. Definite rules in relation to pruning cannot be laid down, however, but every action of the pruner must be governed by a brain that is able to visualise the result.

Broadly, one might state that if severity is called for, it should only be practised in the early years, until the foundation for the widely arranged branches has been made. Once this has been accomplished, pruning should gradually lessen in severity until it may finally become merely a thinning out of growths to ensure the admission of light and air to every part of the tree.

Paradoxical as it may sound, fruit-bearing is a consequence of a certain weakening in some part of the tree.

The flow of sap must be regulated to ensure the development of two types of growths, the weaker class, produced by moderate pruning to form the fruit-bearing buds; and the stronger class, produced by severe pruning, to provide for the extension of the skeleton of the tree. Once this is achieved, and fruit-bearing becomes a habit of the tree, the need of the knife is reduced to a minimum. *A. P. C.*

FRUIT REGISTER.

PEAR BEURRÉ BENOÎT.

REGULAR crops of excellent fruits are invariably produced by this Pear, as it succeeds as a cordon on a south or west wall, or will make a shapely pyramid, in which form it succeeds admirably when worked on the Pear stock.

The fruits ripen during September-October; they are large, about three inches wide, and rather more high, obovate. The pale yellow skin is profusely marked and spotted with pale russet; the white flesh is melting, very juicy and well-flavoured.

Beurré Benoît is a reliable variety, and one that may be planted more frequently with decided advantage; the large size of its fruits is admittedly rather against its frequent use for dessert. *A. C.*

VEGETABLE GARDEN.

FORCED RHUBARB.

WHILE many vegetable products are much more in vogue on the Continent than in this country, the cultivation of Rhubarb is essentially English, and forced Rhubarb finds a regular place in our menus from Christmas onwards.

The stomachic and aperient values of this delicacy are well-known and need no recommendation. The object of this note is not so much to extol its virtues as to suggest that the general custom of forcing this vegetable without light is a mistaken one. We are all, to some extent, the victim of custom, and probably blanched Rhubarb appeals to the general consumer as the right thing, but is it not a fact that this blanching results in a distinct loss of flavour? I see no point in blanching forced Rhubarb, except that for very early crops it may lengthen the stalk and make it more presentable, but even this advantage lapses in the case of later crops.

True, early crops that are produced by covering roots in their natural positions are much more conveniently managed, and probably many market growers produce Rhubarb in dark buildings where other plants could not be grown, but in private establishments much Rhubarb is forced under stages, and in various other positions, in warm houses, and it is the usual custom to take great pains to erect structures round the crowns to exclude light. I am no epicurean, but I have evidence that the distinct flavour peculiar to Rhubarb is partially lost when a crop is grown without light. The chemical composition of the product is bound to be different from that of the naturally grown one, and it would be interesting to have the opinions of other growers and consumers. *W. Auton.*

THE SHALLOT.

THIS very useful vegetable, Allium ascalonicum, is a native of Palestine, whence it came so long ago as 1546; as a matter of interest it is worth recording that the flowers are purple, carried in globose umbels upon a rounded scape. The single bulbs may be planted in late January or in February, four to six inches apart, in rows from twelve to eighteen inches asunder, upon land which has been enriched during the previous season. The subsequent chief cultural requirement is the frequent use of the hoe between the rows.

The bulbs should be ready to harvest about July, when they may be dried and stored in a manner similar to that adopted for Onions. They will be found of appreciable value for "seasoning" purposes and for pickling, many people preferring them to Onions for the latter purpose.

The true type of Shallot has elongated bulbs narrowed to a very long point. There are various forms in cultivation, such as the Large Red and The Jersey, the latter sometimes displaying a tendency to flower and produce seeds. *Ralph E. Arnold.*

HOME CORRESPONDENCE.

Gypsophila fratensis.—I would like to emphasise *A. T. J.'s* remarks. This is a lovely little plant; indeed, one wonders why it is so seldom seen in rock gardens, as it is very easily cultivated and gives a glorious display of flowers during July and August. It derives its name from Mount Frate, where it was found, and should not be confused with G. rosea. I find it thrives best in a well-drained loam with which leaf-mould and coarse sand have been mixed. *W. S., Kildare.*

Chimonanthus fragrans var. grandiflorus.—With reference to your note on the Chimonanthus I exhibited at the R.H.S. Show on January 17, the varietal name was added by someone after I had left the plant in the Committee room; I agree with your reporter (p. 52), without any justification. I showed the plant because at the Wisley meeting on the previous day there had been a discussion as to whether it was suitable for the Award of Garden Merit. It appeared that in many gardens it does not flower at all; for example, it does not flower at Wakehurst. The branch was brought up to show how well it flowers and how well it resists the frost when grown in light soils. The cultural directions which advise hard pruning after flowering and training against a south wall are misleading. My plants are in the open and are never pruned. With regard to the fragrance, I do not think this differs very much in the varieties, but like many plants, a warm atmosphere is required to bring out the scent which is at its strongest towards the end of the day. The so-called grandiflorus variety was, and is, distributed by continental dealers and beyond the flower being a little larger and, perhaps, a little a deeper in colour, it is not of great importance. The finest form is that of a chance seedling which now forms a fine bush at Verrieres. It is figured in *Hortus Vilmorinianus.* This has large flowers of a pure golden colour without any of the basal red which occurs in all other forms. Chimonanthus fragrans is notoriously difficult to propagate from cuttings, and at one time a prize of £10 was offered for a rooted cutting. Messrs. Vilmorin have tried to propagate their form without success, but M. Jaques de Vilmorin now tells me that M. Cassegrain, at Chenault's old nursery, has grafted successfully half-a-dozen or so plants, and it is hoped that this fine variety will shortly be in commerce. *William Lawrence, Burford, Surrey.*

Superphosphate and Potatos (Page 34, Vol. LXXXIII).—To thousands of allotment holders, in London and other thickly populated areas this question of artificial manures is of vital importance. Organic manures are scarce and difficult to obtain; consequently allotment holders are dependent to a great extent on artificial manures to maintain soil fertility. I have under my direction two groups of allotments; the soil of one set is of a heavy, clayey nature; in the other it is light and sandy. Potatos are extensively grown on both, and artificial manure mixtures, consisting of superphosphate, sulphate of ammonia and sulphate of potash, are used at planting time. The Potatos are planted on the trench system; the mixture is scattered along the bottom of the trench and the Potato sets placed thereon; the sets are sprouted before planting. This method has been in practice for the past seven years, and during that period there has not been a single complaint of damage to the sets; indeed, careful observations prove that the application of artificial manures stimulates the haulm, promoting a stout, healthy top, thus fortifying the plant against disease and encouraging the production of heavier crops. Mr. Cuthbertson, in his Mansion House lecture on Potato Growing, said: "Along the bottom of this (meaning the trench) sprinkle a little good artificial manure, two ounces to the running yard will be enough." In my opinion that advice is sound, and I presume that Mr. Cuthbertson meant superphosphate to be one of the ingredients of the mixture referred to. *W. Stewart, N.D.H.*

Saxifraga granulata fl. pl.—Excellent results have been obtained by growing the "Fair Maids of France" as a pot plant in an alpine house or cold conservatory. It provides an excellent foil to the low-growing alpines, and is sufficiently unusual as a pot plant to attract attention. It forms tufts of thick-textured, dark-green, kidney-shaped leaves borne on short stalks, and above these the double, white flowers are carried in loose clusters on six-inch to ten-inch stems. The best results are obtained by lifting strong clumps in early autumn, and potting them in an open mixture of loam, leaf-soil and sand. The pots should be plunged to the rims in an ash bed, in a sheltered position, until late February, when, if then removed to the house, they will flower in April. Being double, the flowers last a considerable time. After flowering the old clumps may be planted out. They succeed best in open woodland or meadow. *L. Le C. T.*

FOREIGN CORRESPONDENCE.

Campanula petraea. — In *The Gardeners' Chronicle* of January 14, Mr. Arnott asks for experience of the culture of Campanula petraea. This rare plant is, of course, not a showy one, and the yellowish flowers are not very bright, but it is an interesting species when growing in perpendicular limestone walls, exposed to the brilliant sun of the south of France; we grow it here in a wall exposed to the full sun. It flowers well and seeds freely. The stem is monocarpic, although the plant is perennial. The numerous shoots flower the year after the central one, and the species blooms here every summer. A compact mass of these small, yellow flowers is not without artistic effect. I may add that the plant is not only a Tyrolean one, but is found in several parts of the Alpes-Maritimes, and especially above Puget-Theniers on the Passe de Biolan, in the perpendicular limestone rocks just above the road. *H. Correvon, Floraire, Geneva.*

SOCIETIES.

NATIONAL ROSE.

The fifty-first annual meeting of the National Rose Society was held at Caxton Hall, Westminster, on January 18, when Mr. H. R. Darlington, the President, presided. There were well over one hundred members present. After the minutes of the last annual meeting had been adopted and signed, the President submitted the Annual Report of the Council for the year 1927.

The following are the most notable items in the Report:—

During the past year the Society has continued to make steady progress, the number of new members being 1,823, making a total membership of 15,000.

The demand for the *Rose Annual* for 1927 was such that the stock in hand was soon exhausted. The Rose Annual for 1928, containing a number of articles of general interest to Rosarians, with numerous illustrations, of which sixteen are coloured, will be sent to members about the middle of March.

Several new additions have been made to the Society's library. The Council will welcome gifts from members of old or standard works on the Rose or gardening generally.

The Society's lantern slides have been in greater demand than ever before. A new set is being prepared and will be completed during the current year. Application by members for the loan of these slides should be made at least three months in advance.

Advice on all matters connected with the Rose is given to members; this branch of the Society's activities has been much appreciated.

Five shows were held during the past year. At the Spring Show, held in the Horticultural Hall on April 22, the exhibits showed an advance on previous years, both in number and quality. H.R.H. Princess Mary honoured the Society by paying an early visit to the show, while, as usual, there was a crowded attendance of visitors during the afternoon. The Summer Show was held in the grounds of the Royal Hospital, Chelsea, on July 1 and 2, when nurserymen's groups were, as usual, the leading feature; in spite of the bad weather, the results far exceeded expectations. Her Majesty The Queen was unable to visit the show in the morning, but paid a surprise visit during the afternoon. H.R.H. Princess Louise was also a visitor. The attendance on the Friday was 24,000, and on the Saturday, 21,000—a record. The Provincial Show was held at Cheltenham on July 6 and 7. The weather was fine and the show was well organised.

The exhibition of new Roses, held in the Royal Horticultural Hall on July 15, attracted a large number of visitors. Ninety-four new varieties were shown, and there was keen competition for the *Daily Mail* Gold Cup for the best new, scented seedling Rose. The Autumn Show was also held in Westminster on September 9 and 10; it proved to be the finest exhibition of autumn Roses ever held by the Society.

A Rose Conference, under the auspices of the National Rose Society, will be held on July 2, 1928, and it is hoped that members will give it their utmost support. Further particulars will be published in the Society's *Book of Arrangements*.

Arrangements have been made for the establishment of Trial Grounds for Roses, wherein it is hoped to test the garden value of new seedling Roses. The most prominent Rose-growers have promised their support. In the first place, the establishment of the trial grounds will be in the nature of an experiment; if it is successful it will be developed.

The financial position of the Society is highly satisfactory. The total receipts for the year, including the balance of £42 11s. 6d. brought forward from 1926, amounted to £9,355 7s. 2d., and the total payments for the same period, including the sum of £2,103 15s. 3d., which has been placed to the credit of the reserve fund, amounted to £9,163 9s. 7d., leaving a balance at the bankers of £191 17s. 7d. The Reserve Fund is now £10,000.

The work done by local Hon. Secretaries and other friends was acknowledged, and thanks were accorded to Miss Willmott, F.L.S., one of the Society's Vice-Patronesses, for generous services rendered.

The President commented on several of the items. Referring to the *Daily Mail* competition for the best new, scented seedling Rose, he suggested that the Roses of to-day, in general, were better-scented than those of fifty years ago. He stated that he considered the removal of the Summer Show from the Royal Botanic Gardens to the grounds of the Royal Hospital, Chelsea, had been fully justified, and expressed the hope that negotiations would soon be completed for the holding of future summer shows in the same grounds. When speaking of the proposed Rose Conference, he briefly outlined the programme now before the Council. This includes the reading of three papers connected with Roses, visits to Kew and a leading Rose establishment, and a dinner for the express purpose of entertaining visitors from other countries. Mr. Darlington suggested that the establishment of the Rose Trial Grounds would widen the scope of the Society's activities immensely, and stated that it was the intention of the Council to keep the expenses at a minimum for the first year; if possible, within the income from the investments. He stated that the Trial Grounds would be under the management of Mr. Courtney Page.

Mr. H. Oppenheimer, in seconding the adoption of the Report, spoke optimistically of the future of the Society, and suggested that the Rose Trial Ground, under the guiding influence of Mr. Courtney Page, was sure to be a success.

Before the Report was adopted, a suggestion was made that the *Official List of Roses* should be made to include all those in cultivation; this matter was referred to the Publications Committee.

Mr. Owen Murrel asked for the support of the National Rose Society with regard to a resolution proposed by the Horticultural Trades' Association, to request the Government to revise the Merchandise Marks Act in respect to the importation and sale of foreign Roses. The Chairman received the motion and promised it the Council's careful consideration. The Report was then adopted.

The Hon. Treasurer, Mr. S. A. R. Preston-Hillary, being unavoidably absent, the Financial Statement was submitted to the meeting by the Hon. Secretary. It was passed without discussion. The balance-sheet showed that subscriptions amounted to £7,531 3s. 10d., the proceeds of shows, £701 6s. 6d.; advertisements, £346 4s. 4d.; and interest on invested funds, less income tax, £383 19s. 0d.; the total income amounting to £9,355 7s. 2d. Payments included £2,141 14s. 3d. for publications; £368 9s. 8d. for printing, stationery and advertising; £700 8s. 1d. for postages and sundry expenses; honorarium to the Hon. Secretary, £360 0s. 0d.; salaries, £597 2s. 0d.; expenses of shows, £1,581 5s. 11d.; and prizes, including medals and plate, £1,038 7s. 9d. The sum of £2,103 15s. 3d. had been invested during the year, leaving a balance in hand, as already stated, of £191 17s. 7d.

The ballot for the membership of the Council resulted in the return of most of the old members and the election of three new ones:—Mr. Sidney Cant, Mr. W. E. Harness and Mr. O. Murrell.

A vote of thanks to the Council and Officers of the Society for their untiring and highly successful efforts was proposed by Mr. W. E. Harvey, seconded by Mr. Sidney Cant, and carried with enthusiasm. A vote of thanks to the Chairman concluded a very successful meeting.

Tea was provided for members, and an excellent programme of music was arranged after the conclusion of the general business.

GLASGOW AND WEST OF SCOTLAND.

A well-attended meeting of the above Society was held at the Christian Institute, Glasgow, on Wednesday last, when Mr. Joseph Dobson occupied the chair. Sir John Reid, who has just recovered from a severe illness, was also present, being an Honorary President. Mr. A. T. Harrison, of Culzean Castle Gardens, delivered a lecture on "The Amateur's Greenhouse." As an introduction, Mr. Harrison stated that when he started as a head gardener he had only one small greenhouse and a few cold frames wherein to raise a large number of bedding plants; keep up a varied supply of pot plants; Chrysanthemums for the autumn; and Tomatos in the summer. The lessons then learned had stood him in good stead in after life.

He stated that the amateur will always have an advantage over the professional in the greenhouse, as in the garden, in that he determines what is to be grown and can lay his plans accordingly. Whether he attains success depends to a great extent on several important factors, not the least being the time at his disposal, also the suitability of the plants selected for culture. A small glasshouse, not exceeding twenty feet long by ten or twelve feet wide, is of convenient size for a keen amateur to attend to in his spare time.

Mr. Harrison, when discussing the various types of greenhouses in use, remarked that where a wall was available, a lean-to structure was most economically erected; if it faced due south it would receive the maximum amount of sunshine and was in consequence more easily heated. The only drawback to this type of house is that plants on the back stages had a tendency to become one-sided unless they were repeatedly turned. For this reason he preferred the three-quarter-span or hip-roofed greenhouse, that not only allows greater headroom but permits light to reach all plants from both sides, thus keeping them in better shape.

Where no wall is available, the usual span-roofed greenhouse is the only alternative and is well adapted for the growing of most plants that an amateur may desire.

As an indication of the usefulness of an unheated greenhouse, Mr. Harrison mentioned what might to many people appear a fairy tale; that since 1919 he had succeeded each year in producing good crops of Grapes, Peaches, Nectarines and Figs, without resorting to any artificial heating. As other suitable subjects, he specified alpine plants, British Ferns, Border Carnations, bulbs, Roses, Camellias, Rhododendrons, Azaleas, Heaths, etc.

Staging, heating, watering and ventilation were exhaustively reviewed in turn; in connection with the latter, the lecturer suggested that it was within the bounds of possibility for horticultural builders to devise some electrical method of control.

GUILDFORD AND DISTRICT GARDENERS'.

At a meeting held on Monday, January 9, Mr. Taylor, of Messrs. Sutton and Sons, Reading. dealt with the cultivation of Vegetables for Exhibition. The chief vegetables brought under review were Potatos, Onions, Cauliflowers, Carrots, Celery, Leeks, Peas, Parsnips and Runner Beans.

In addition to many valuable hints upon the methods and time of planting, manuring, and safeguarding against pests, Mr. Taylor gave advice upon methods of staging; this he thought almost as important as cultivation, as good produce badly staged would stand a poor chance in any competition.

After the lecture, a well sustained discussion was carried on, in which Mr. J. A. Kirkwood, of Sutton Place, and Mr. T. Newman, of Tangley Park, took part.

The lecture was made the more interesting by a number of coloured lantern slides which showed various vegetables growing, and also as staged for exhibition.

Mr. W. T. Patrick, the President, expressed the thanks of the meeting to Mr. Taylor (and his firm) and to the lanternist, for their attendance.

The Show Committee of the Association met on the 12th inst., when the very gratifying announcement was made that Mr. Miles would undertake the duties of Show Secretary. Mr. Walter Miles is well-known for his organising capacity, having served as Secretary to the Guildford Chrysanthemum Society, and organised their signally successful shows for several years past.

On February 2, Mr. Kirby, of Pirbright, will lecture on "Rock Gardens," and on February 13, Mr. W. Auton will lecture on his recent tour in the West Indies.

ELGIN HORTICULTURAL.

The annual meeting of this Society was held in Gordon's Temperance Hotel, Elgin, on January 16. Lord Provost Wittet, President, occupied the chair. A most satisfactory condition of affairs was submitted by the Secretary and Treasurer, Councillor T. L. Mann, which showed that the Society carried forward a credit balance of £75 18s. 1d., compared with £54 18s. 7d. at the beginning of 1927. In the course of his remarks, Mr. Mann said he had it on the best authority that, apart from the exhibits at their 1927 show being unsurpassed for excellence in the Sweet Pea section, the competition put up by the exhibitors was the strongest in Scotland. One remarkable feature, and one that had aroused great interest, was the fact that an amateur, Mr. Mackintosh, Aberdeen, won the Cup in the Sweet Pea section, and that, too, against some of the most renowned Sweet Pea growers in Scotland.

The President considered it very satisfactory that the balance in favour of the Society had increased by £21; the substantial nest-egg would ensure them prosperity for some time to come.

The reports were unanimously adopted, and the office-bearers re-elected. A warm tribute was paid by the President to Mr. Mann for the excellent work he had done and was doing on behalf of the Society, a sentiment heartily endorsed by those present.

CARDIFF AND DISTRICT GARDENERS'.

Mr. W. Bennett presided at the well-attended meeting of the Cardiff and District Gardeners' Association, held on January 16, at the Queen's Hotel, Cardiff, when Mr. F. H. Osmond Smith, the County Land Agent, gave an interesting lecture, entitled, "Forestry: including Arboriculture and Sylviculture."

Mr. Smith spoke of the lack of education in connection with forestry at the present day, and of the useful work accomplished by the Forestry Commission, which has resulted in the provision of work for a number of the unemployed. He also expressed the view that private landowners, who at present receive grants of £2 for Conifers, and £4 for hard-wooded trees, for every acre planted, require further support. The lecturer gave an interesting account of the various trees suitable for timber production, also those which are suitable for planting in parks and the streets of towns.

Mr. J. T. Smith, of Duffren Gardens, opened the discussion which followed the lecture with a survey of the trees and shrubs most suitable for use as wind-breaks and screens in private gardens, and of those subjects most liable to damage from wind and snow.

Mr. A. Gibbs gave an interesting comparison of the amount of imported and home-grown timber that is used in the mining industry; and Mr. A. Fry discussed the subject of town and street planting, with suggestions as to the use of a number of subjects more suitable than many of those grown at present.

The beautiful effect created in Belgium and France by the planting of flowering trees in the streets, also the adaptability of various subjects to wet soil conditions, were commented upon by Mr. E. T. Everard, while Mr. R. Mayne spoke of the work that is being done to replace the enormous amount of timber that was felled during the war.

A vote of thanks was accorded to Mr. F. H. Osmond Smith, and to those members that had taken part in the discussion.

The next meeting of this Association will be held on January 31, when Mr. H. R. Farmer, of Cardiff Castle Gardens, will lecture on "Points in Judging."

Obituary.

W. A. Cull.—We regret to learn of the death of Mr. W. A. Cull, of Edmonton, a leading member of the older band of growers who cultivate plants and flowers for Covent Garden Market. He was especially well-known as a clever cultivator of Ferns and Palms, but he also interested himself in several other subjects. Mr. Cull had many business associations. He was a member of the Council of the Horticultural Trades' Association and formerly served on the Committee of the British Florists' Federation.

John Cypher, V.M.H.—On Sunday last, after a long illness, borne with unwavering patience and cheerfulness, Mr. John Cypher passed away at his home, Queens Road, Cheltenham. For several generations the name of Cypher has been a household word among horticulturists and during the past half-century no one done more to keep that name famous and honourable than John Cypher. He had a charming personality that endeared him to all who were privileged to enjoy his friendship. In all his business transactions he was straight and honourable in the highest degree—his word was his bond. In all horticultural matters he was a fount of knowledge, and very few men had so long and wide an experience of Orchids and indoor plants generally. For all practical purposes, it may be asserted that Mr. John Cypher introduced the present system of displaying large, artistic groups of plants at the leading shows, and certainly no one held such a remarkable record of successes in the arrangement of such groups. His last personal effort in this connection was at Southport, last year, and it was at that show that his many friends noticed the beginnings of the physical disability which eventually ended his long and useful life. In former years, and during the life-time of his father, Mr. John Cypher was a most successful exhibitor of stove and greenhouse plants, and his firm was then as famous for these fine examples of cultural skill as, in later years, it has been for Orchids and artistic groups. Mr. John Cypher was a competent and careful judge, and for a long series of years adjudicated at York, Shrewsbury, Wolverhampton, London, Hanley and other big shows. That he was a skilful florist and decorator goes without saying. His knowledge of Orchids was wonderful, and recognised by the Royal Horticultural Society and the Manchester and North of England Orchid Society, on whose Committees he served regularly for many years. His general services to horticulture it is impossible to compute, for his experience was at the service of all who needed advice, while the kindly encouragement he gave to young men and new exhibitors must remain a pleasant memory to hosts of gardeners. In recognition of these fine services, Mr. Cypher was awarded the Victoria Medal of Honour in Horticulture in 1911; but although John Cypher will be remembered for his experience, knowledge and skill, it is for his charming personality and beautiful character that he will be remembered best by those who have known him well; and consequently loved him greatly. To all the bereaved members of his family the deepest sympathy will be extended, and particularly to Miss Cypher, whose gentle ministrations meant so much to her father.

THE LATE JOHN CYPHER.

ANSWERS TO CORRESPONDENTS.

Lettuces Diseased.—*A. D. H.* The rusty-looking depressions on the bases of the mid-ribs of the Lettuce plants are due to the presence of Marssoniana Panaltoniana. This disease usually occurs as a result of a lowering of the temperature in the house in which the plants are growing.

Raising Orchids from Seeds.—*W. L.* The method now generally adopted for the successful germination of Orchid seeds is that of sowing the seeds on a specially prepared medium in culture tubes. This medium is scientifically prepared and requires laboratory equipment. A fair amount of success, however, may be obtained by sowing the seeds of Cypripedium, Calanthe, Odontoglossum, Miltonia, Dendrobium, Cymbidium and other kinds, on the surface of the rooting medium surrounding a mature plant of the same genus. Cattleya seeds will germinate freely when sown on specially prepared beds of finely chopped Sphagnum-moss and fibre, enclosed in cheese-cloth or similar material, and pressed tightly into small pots. A plant repotted with fresh materials will, after a few weeks, provide a suitable seed-bed; the surface of the potting material should be cut over before sowing the seeds on the surface, and, as no covering compost is required, great care must be taken when supplying moisture. It is a good plan to wash the seed in with a light sprayer, and afterwards to dip the pot to half its depth in water, thus allowing the moisture to permeate the upper portion of the compost without disturbing the seeds. Even under the best conditions a crop of seedlings must not be expected all at once, the seeds often taking several weeks to germinate, and with some genera, Cypripedium as an example, many months sometimes elapse before the final seedlings make their appearance.

Shrubs for Border Facing South.—*G. F. M.* We recommend the following:—Back: Cotoneaster frigida, Buddleia variabilis, B. globosa, Magnolia Soulangiana, Ceanothus thyrsiflorus, Berberis vulgaris, Spiraea prunifolia fl. pl., S. Lindleyana, S. Henryi, Rosa Moyesii, Lilacs Souv. de Louis Späth and Madame Lemoine. Centre: Cotoneaster rotundifolia, Berberis Darwini, B. polyantha, B. stenophylla, Magnolia stellata, Spiraea arguta, S. Menziesii var. triumphans, Kerria japonica fl. pl., Philadelphus Virginal, P. Voie Lactae. Front: Cotoneaster horizontalis, Berberis Wilsonae, Potentilla fruticosa, P. Veitchii, Rhododendron racemosum, Olearia Haastii, Veronica Traversii, Ceanothus Gloire de Versailles, C. Marie Simon, Cytisus purpureus, C. Beanii, Genista tinctoria fl. pl., G. hispanica. Standards: Crataegus Carrierii, Pyrus Eleyi, Prunus Hizakura, and Laburnum alpinum.

Tulips Failing.—*E. C.* No fungus was present nor could any trace of disease be discovered in your Tulip bulbs. It would appear that the plants were forced excessively before they had been thoroughly well rooted. Probably if you have other batches and they are brought on more steadily, you will find less trouble.

Communications Received.—S. T.—W. K.—H. G. L.—H. E.—A. B.—W. G. C.—C. D. C.—C. H.—S. W. B.—J. P.—W. L.—S. J. L.—T. H. B.

MARKETS.

COVENT GARDEN, Tuesday, January 24th, 1928.

Plants in Pots, etc.: Average Wholesale Prices.

(All 48's except where otherwise stated).

	s. d. s. d.
Adiantum cuneatum per doz. ...	12 0-15 0
—elegans ...	12 0-15 0
Aralia Sieboldii	9 0-10 0
Araucarias, per doz.... ...	30 0-40 0
Asparagus plumosus ...	12 0-18 0
—Sprengeri ...	12 0-18 0
Aspidistra, green	16 0-60 0
Asplenium, doz.	12 0-18 0
—32's	24 0-30 0
—nidus ...	12 0-15 0
Cacti, per tray 12's, 15's ...	5 0—7 0
Crotons, doz. ...	30 0-45 0
Crytomiums ...	10 0-25 0
Cyclamens, 48's per doz. ...	27 0-36 0
Daffodils, 48's, per doz. ...	12 0-15 0
Erica gracilis, 48's, per doz.	24 0-30 0
— — 60's, doz.	12 0-15 0

	s. d. s. d.
Erica, mixed, 72's, per doz.	8 0—9 0
—hyemalis, 48's, per doz. ...	18 0-24 0
—nivalis, 48's, per doz. ...	21 0-27 0
— — 60's, doz.	12 0-15 0
Hyacinths, 3's, per doz. ...	21 0-30 0
—60's, per doz.	9 0-10 0
Marguerites, 48's, per doz. ...	18 0-21 0
Nephrolepis in variety ...	12 0-18 0
—32's	24 0-36 0
Palms, Kentia	30 0-48 0
—60's	15 0-18 0
Pteris in variety	10 0-15 0
—large, 60's ...	5 0—6 0
—small ...	4 0—5 0
—72's, per tray of 15's ...	2 6—3 0

Cut Flowers, etc.: Average Wholesale Prices.

	s. d. s. d.
Adiantum decorum. doz. bun.	21 0-24 0
—cuneatum, per doz. bun. ...	12 0-15 0
Anemones, St. Brigid, per doz. bun. ...	6 0—9 0
—fulgens, per doz.	7 0—8 0
Arums (Richardia), per doz. blooms ...	8 0-10 0
Asparagus plumosus per bun. long trails ...	2 6—3 6
—med. sprays	2 0—2 6
short „ ...	— 1 0
—Sprengeri, bun. long sprays	2 6—3 0
med. „ ...	1 0—1 6
short, „ ...	0 6—1 9
Camellias, 12's or 18's, per box	— 3 6
Carnations, per doz. blooms	3 6—5 0
Chrysanthemums, per doz. blooms—	
—white ...	4 0—8 0
—yellow ...	5 0—8 0
—pink... ...	5 0—8 0
—bronze ...	5 0—8 0
—red	4 0—5 0
—spray, pink, per doz. bun.	36 0-42 0
—spray, yellow. per doz. bun.	30 0-36 0
—spray, white, per doz. bun.	30 0-42 0
Croton leaves, per doz. ...	1 9—2 6
Daffodils, Golden Spur, per doz. bun.	9 0-12 0
Fern, French, per doz. bun.	10 0-12 0
Forget-me-not, per doz. bun.	12 0-15 0
Freesia, white, special, per doz. bun. ...	12 0-15 0
—ordinary ...	3 6—4 0
Heather, white, per doz. bun.	— 12 0
Hyacinths, Roman, per doz. bun.	12 0-15 0
—large white, per doz. spikes	4 0—5 0
Lilac, white, per doz. sprays...	6 0—9 0
—mauve, per doz. spikes ...	6 0—9 0
Lilium speciosum rubrum, long, per bun. ...	5 0—6 0

	s. d. s. d.
Lilium rubrum, short, per doz.	3 6—4 0
—longiflorum, long, per bun.	7 0—7 6
—short, per doz. blooms ...	7 0—8 0
Lily-of-the-Valley, per doz. bun.	24 0-30 0
Marigolds, per doz. bun. ...	3 0—4 0
Myrtle, green, per doz. bun.	1 6—2 0
Narcissus Soleil d'Or, per doz. bun.	6 0—9 0
—Grand Primo, per doz. bun.	4 0—5 0
—Paper White, per doz. bun.	5 0—6 0
Orchids, per doz.	
—Cattleyas ...	21 0-30 0
—Cypripediums	8 0-10 0
Roses, per doz. blooms—	
—Madame Butterfly ...	12 0-15 0
Smilax, per doz. trails ...	3 0—4 0
Tulips, per doz. bun.—	
—single, white	15 0-18 0
— — yellow ...	24 0-30 0
— — red ...	18 0-24 0
— — pink ...	24 0-30 0
— — terra cotta	18 0-24 0
— — mauve ...	15 0-21 0
Violets, per doz. bun.... ...	4 0—6 0
French flowers—	
—Anemone. De Caen, doz. bun.	15 0-18 0
— blue, per doz. bun.	7 0—8 0
—double pink, per doz. bun.	5 0—6 0
—Acacia (Mimosa), per doz. bun.	10 0-12 0
—Marigolds, per doz. bun. ...	4 6—5 0
—Narcissus, Paper White, per doz. bun.	2 6—3 0
—Gloriosa, per doz. bun. ...	3 0—3 6
—Soleil d'Or, per doz. bun.	2 6—3 6
—Ranunculus Barbaroux, per doz. bun. ...	7 0—8 0
—Carmine, per doz. bun. ...	5 0—6 0
—Romano, per doz. bun. ...	12 0-15 0
—Violets, Parma, double, per bun.	4 0—5 0
—single, per doz. bun.	2 6—3 6

REMARKS.—Supplies throughout this department have been on the increase during the past week, with the exception of Gardenias, Orchids, Lily-of-the-Valley and Roses, prices for these flowers fell rapidly this morning. In addition to the increasing supply of Daffodils from the Spalding district, consignments arrive daily from Cornwall and the Channel Islands. These include some fine Narcissus Soleil d'Or and N. Grand Primo. Anemone fulgens, Freesias, and some short-stemmed Wallflowers are also arriving from the same source. Iris tingitana is now offered in much better condition, but supplies are short. A new arrival in this department is Narcissus ornatus, also the double-flowered Daffodil Van Sion. Tulips are more than sufficient for present requirements, and home-grown blooms are arriving in excellent condition. There is a shortage of foliage at the present time, more especially of Asparagus plumosus, A. Sprengeri and Maidenhair Fern.

In the French department supplies are increasing daily, therefore prices are easier. The more regular supply of Parma Violets is greatly welcomed.

In the Plant department business is improving. Bulbs in pots are the chief attraction as there is a good supply of Hyacinths and Daffodils in forty-eights and sixty's. A few plants of Cineraria stellata, Spiraeas, Azaleas, Primula malacoides and Erica hyemalis have realised good prices.

Vegetables: Average Wholesale Prices.

	s. d. s. d.
Asparagus, Devon ...	8 0-10 0
—Lauras ...	15 0-20 0
—Giant ...	— 50 0
—Paris Green	— 8 0
—Sprue ...	— 1 6
—"National"	15 0-16 0
Beans, Madeira, per box ...	3 0—8 0
—Guernsey, finest, per lb.	8 0-10 0
—ordinary ...	2 6—4 0
Beets	6 0—8 0
Brussels Sprouts ½-bag ...	3 0—5 0
Cabbage, St. Malo ...	4 0—6 0
Carrots ...	6 0—7 0
Cauliflower, per crate ...	6 0—8 0
Celery (washed), per doz. fans	18 0-36 0
Cucumbers, doz.	12 0-18 0
Endive, Cornish	1 6—2 0
—Batavian, per doz.... ...	2 0—3 0

	s. d. s. d.
Leeks, per doz.	2 6—3 0
Lettuce, French, round, per doz.	1 6—3 0
Mint, forced, per doz. bun.	4 0—8 0
Mushrooms—	
—Cups ...	2 0—3 0
—Broilers ...	1 6—1 9
Onions—	
—Dutch ...	7 6—8 6
—Spanish ...	13 0-15 0
Parsnips, cwt.	4 0—5 0
Potatos—	
—English, cwt.	5 0—8 0
—Guernsey, new, per lb. ...	0 8—1 3
—Azores, case	10 0-20 0
Tomatos, English, per lb. ...	— 1 6
—Canary Islands ...	18 0-22 6
Turnips, per cwt. ...	3 6—4 0

Fruit: Average Wholesale Prices.

	s. d. s. d.
Apples, English—	
—Newton Wonder	4 0—8 0
—Lane's Prince Albert ...	4 0—8 0
—Bramley's Seedling ...	6 0-12 0
—other cookers	3 0—6 0
—trays, Cox's, 24's	6 0-10 0
Apples, American—	
—Newtowns ...	12 0-14 0
—Delicious ...	12 6-15 0
—Oregon, Newtown Pippin	13 6-17 6
Apples, Nova Scotian—	
—Greenings ...	16 0-24 0
—Baldwin ...	20 0-26 0
—Stark... ...	18 0-24 0
—Russet ...	28 0-34 0
Bananas ...	16 0-24 0
Grape Fruit—	
—Dominica ...	20 0-25 0
—Jamaica ...	20 0-22 6
—Florida ...	— 30 0
Grapes, English—	
—Alicante, per lb.	1 6—3 6
—Colmar ...	1 6—3 0
Grapes. South African—	
—Black Prince, per 10 lb. box	6 0—7 0

	s. d. s. d.
Lemons, Messina. per case ...	20 0-35 0
—boxes ...	10 0-17 6
Nectarines, South African, per box	8 0-18 0
Oranges, per case—	
—Valencia and Denia, per case	8 0-30 0
—Seville ...	16 0-22 0
—Jaffa	18 0-20 0
—Tangerines ...	1 0—2 2
Peaches, South African, tray	4 0-12 0
Pears—	
—Doyenné du Comice, per doz.... ...	3 0—6 0
—Oregon Doyenné du Comice, ½ case	14 0-16 0
—Nelis ...	17 6-20 0
Pines, per case	17 0-32 0
Plums, South African—	
—Santa Rosa ...	5 0—9 0
—Methley ...	3 6—7 0
—Wickson ...	5 0-10 0

REMARKS.—For the time of year there is considerable activity in many sections of the market. Fruits from South Africa are a leading feature at the moment. Quantities are heavy, but they seem to be moving out satisfactorily. At present the shipments consist mainly of Peaches, Nectarines, Pears, Plums and Grapes. Hothouse Grapes, both English and Belgian, are selling fairly well, though some of the latter lack colour. There are moderate supplies of Apples from North America and they are finding a ready market. Large Oranges continue to sell well, but small fruits are still difficult to dispose of. Hothouse Cucumbers do not sell very briskly, and prices are comparatively low.

Forced Beans continue at a high selling level in spite of heavy supplies from Madeira. Tomatos from the Canary Islands are not in demand and prices will continue to fall. The Mushroom section is quiet, supplies being rather more than the demand can absorb at present.

English Apples do not sell at all well, a few really good Bramley's Seedlings being all that are required. New Potatos from Guernsey and the Azores, also a few from Algiers, are selling moderately well. Salads are in demand, and the green vegetable department reports fairly good business. Old Potatos sell well with little or no fluctuation in values.

GLASGOW.

There seems to be no indications of any expansion in business, and prices in the cut flower section continue in a downward direction. Tulips were fairly plentiful and realised the following prices:—Roserie, 1s. 3d. to 1s. 6d for 6's; Couronne d'Or, Prince of Austria, Murillo and William Copland, 1s. to 1s. 3d.; Brilliant and Mon Tresor, 9d. to 1s. Golden Spur Daffodils were worth, 1s. to 1s. 3d. per bunch; and King Alfred 2s. to 2s. 3d. Narcissi made 12s. per case; Hyacinths, 9d. to 1s. 3d. for 3's; Mimosa, 9s. to 10s. per case; Lily-of-the-Valley, 1s. 3d. to 1s. 6d. per bunch; and Lilium longiflorum, 4s. to 6s. Carnations, at 3s. to 4s. per dozen, were scarce and of poor quality, while the small quantity of Rose blooms available made 10s. to 12s.

In the fruit market, consignments of Apples arrived from Nova Scotia and were sold at the following prices:—Russets, No. 1, 40s. to 44s. per barrel; No. 2, 28s. to 32s.; Starks, No. 1, 27s. to 32s.; No. 2, 24s. to 26s.; Domestic, 24s. to 28s.; Baldwin, No. 1, 26s. to 30s.; No. 2, 20s. to 24s.; No. 3, 15s. to 16s.; Domestic, 22s. to 24s.; Fallawater, No. 1, 28s. to 32s.; No. 2, 26s.; and No .3, 14s. to 16s. 6d. Canadian Albemarle Pippins made 50s. to 62s. per barrel; York Imperial, 28s. to 38s.; Winesap, 11s. 6d. to 15s. per case; Rome Beauty, 9s. 6d. to 12s. 6d.; and Newtown Pippin, 17s. to 20s.; Jaffa Oranges sold at 144's and 240's, 16s.; 152's, 15s. 6d.; 180's, 18s.; Valencia Oranges, 9s. to 26s.; Florida Grape Fruit, 22s. to 27s.; Cape Peaches, 4s. 6d. to 10s.; Santa Rosa Plums, 4s. to 7s. 6d.; home-grown Grapes, 2s. 6d. to 3s. 6d. per lb.; Belgian Gros Colmar Grapes, 1s. to 1s. 4d.; Californian Winter Nelis Pears, 26s. per case; Washington, 18s. to 20s.; and Pear Beurré Bosc, 10s. per box.

In the vegetable market, the first consignment of Jersey Potatos was disposed of at 6d. per lb.; and Algerian Potatos, 3d. per lb. Syboes made 4d. per bunch; Carrots, 3s. per dozen bunches; Lettuces, 6s. to 8s. per crate; Cauliflowers, 5s. to 6s.; Mushrooms, 2s. 6d. per lb.; and Teneriffe Tomatos, 8s. to 18s. per bundle.

TRADE NOTES.

MESSRS. FRANK CANT AND CO. write that as there has been so much criticism regarding the name given to their new seedling climbing Rose "Chin Chin," which was awarded a Certificate of Merit at the last summer show of the National Rose Society, and upon which we made favourable comments, it has been decided to re-name the variety Promise.

WE have recently received samples of the T. P. Seed Box, from the "T. P." Seed Box Co., Birmingham, showing the various types of this useful seed-box now obtainable. These consist of cardboard sections, enclosed in wooden trays, and are claimed to be especially suitable for the raising of Sweet Peas and annuals which do not transplant successfully. It is suggested that they save considerable space and reduce watering to a minimum, while at planting time the cardboard is sufficiently decayed to be peeled off without any disturbance of the plant roots.

SCHEDULES RECEIVED.

TAMAR VALLEY (COMMERCIAL) HORTICULTURAL SPRING SHOW.—Exhibition to be held at the Guildhall, Plymouth, on Wednesday and Thursday, March 28 and 29.—Secretary, Mr. H. W. Abbiss, County Hall, Truro.

WESTERN COMMERCIAL HORTICULTURAL SPRING SHOW.—Exhibition to be held at St. John's Hall, Penzance, on March 8 and 9.—Secretary, Mr. H. W. Abbiss, County Hall, Truro.

CATALOGUES RECEIVED.

Seeds.

J. BONE AND CO., 172, Easter Road, Edinburgh.
WM. POWER AND CO., Waterford, Ireland.
W. F. GULLICK, Waterloo Nursery, Salisbury.
G. H. PLANT AND CO., The Eastgate, Chester.
L. R. RUSSELL, LTD., Richmond, Surrey.
CLARENCE ELLIOTT, LTD., Six Hills Nursery, Stevenage.
M. ROWAN AND CO., 51, Capel Street, Dublin.

Garden Sundries.

H. C. SLINGSBY, 97, Kingsway, London, W.C.2.

Foreign.

F. M. ELLIS, P.O. Box 491, Griffin, Georgia, U.S.A.
ANT. ROOZEN AND SON, Post Box 100, Haarlem, Holland.

GARDENING APPOINTMENTS.

Mr. G. C. Johnson. At a recent meeting of the East Sussex Agricultural Committee Mr. G. C. JOHNSON of the Department of Agriculture, The University, Leeds, was appointed Horticultural Superintendent for the County of East Sussex. He commences his new duties on April 1.

Mr. T. Botting, late of Highlands, Redhill, Surrey, and previously at The Hermitage, Newick, Sussex, as Gardener to J. S. KILLICK, Esq., Merle-Wood, Mount Harry Road, Sevenoaks, Kent. (Thanks for 2s. for R.G.O.F. Box.—EDS.)

Mr. Henry Smith, for twenty-three years Gardener to the late J. U. GODSELL, Esq., Stratford Court, Stroud, Gloucester, as gardener to A. W. MARTYN, Esq., The Hearne, Charlton Kings, Cheltenham, Gloucester. (Thanks for 2/6 for R.G.O.F. Box.—EDS.)

THE
Gardeners' Chronicle
No. 2145.—SATURDAY, FEBRUARY 4, 1928.

CONTENTS.

Alpine garden—
  Androsace pyrenaica 80
  Ramondia Heldreichii 79
  Synthyris reniformis 80
Artindale, Mr. J. ... 74
Birds and Fruit ... 87
Carnations in the United States ... 78
Fruit garden—
  New Raspberry plantations 87
"Gardeners' Chronicle" seventy-five years ago 75
Garden manures in February 86
Garden notes from S.W. Scotland 83
Ghent Floralies ... 75
Hardy flower border—
  Commelina coelestis 80
  Disporum oreganum 80
  Erodium pelargoniflorum 80
  Saxifraga granulata 80
Ideal gardens and plant lore 82
Indoor plants—
  Jasminum Sambac 78
  Rooting Zonal Pelargoniums 78
  Stifftia chrysantha 78
Iron as a tonic for plants 87
La Mortola 73
Obituary—
  McDonald, Wm. ... 91
  Shoolbred, Dr. A. ... 91
Park superintendent, the qualifications of an ideal 85
Plant Diseases in Scotland 74
Plants new or noteworthy—
  Aristolochia Lindneri 81
Primulas, Burmese ... 83
Snowdrops at Burford 87
Societies—
  Banffshire Horticultural 89
  National Carnation and Picotee ... 91
  Gardeners' Royal Benevolent ... 88
  Mossport (Glasgow) Horticultural ... 90
  Orchid Club ... 88
  Reading and District Gardeners' ... 90
  Royal Horticultural 89
Sparrows and the Flowering Currant ... 87
Sweet William, the double dark ... 87
Trees and Shrubs—
  Choisya ternata ... 78
  Currants, ornamental 78
  Pyrus baccata ... 78
Tulips, the "breaking" of 84
Violas, a revision of 85
Week's work, the ... 76
Wisley, notes from ... 82
Wisley, Scholarships at 74

ILLUSTRATIONS.

Aristolochia Lindneri: cultivated plant, 81; natural plant, 80; section of flower 80
Artindale, Mr. J., portrait of 74
Disporum oreganum 77
Potentilla fruticosa var. Veitchii 79
Pyrus baccata 75
Synthyris reniformis 83

SUPPLEMENT PLATE.

View of Nice from the Terrace Garden at La Selva.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 39.2°.

ACTUAL TEMPERATURE.—*The Gardeners' Chronicle* Office, 5, Tavistock Street, Covent Garden, London, Wednesday, February 1, 10 a.m. Bar. 29.7. Temp. 47°. Weather, Fine.

La Mortola.

THE horticulturally faithful have many Meccas. There are the tropical gardens of Peradeniya and Buitenzorg, to which those who embark on long voyages may make pilgrimage. There are the home gardens which horticulturally pious hands have made so beautiful as to vie with any in the world, and there are the two privately-owned gardens of Cintra and La Mortola, the one in Portugal and the other just over the Riviera border which separates France from Italy. They have each a grace and charm and luxuriance which give them a place apart from all others. The one the traveller saw last he admires most, and therefore, it being but a few days ago since we visited La Mortola, we cannot but ascribe the palm to it. Despite the facts that even in the Riviera plants enjoy a resting season, and that even in that clement region frost came this year with rare severity, La Mortola under a blue sky, and admiring itself in a blue sea, revealed itself during this January visit as one of the most perfect places on earth. The genius—for it was genius—which led the late Sir Thomas Hanbury to choose the site and plant it up with Cypress, Pine and Eucalyptus, is patent to-day. For Mr. Cecil Hanbury, and also Mrs. Hanbury, possess, as the founder of the garden did, the art of garden making. Some gardens—those in level places, for example—need to be diversified, but this great garden of over two-hundred acres, running down insensibly from the mountains to the sea, possesses naturally all those diversities of level which other gardens seek often too vainly to show, and gives, nevertheless, the impression of oneness—a perfect whole—and that notwithstanding the fact that the wealth and variety of plants are amazing. It is this character that gives it the quality of perfection. To describe this wealth and variety is, however, impossible. Here is a rocky cove in which, if memory serves, one-hundred-and-fifty species of Mesembryanthemum are snugly ensconced; some, it is true, looking the worse for the recent frosts, but several of them, such as M. diversifolium, flowering bravely, notwithstanding the shock which the weather gave them recently. Among those which recked not of the hard weather, the most curious of all Mesembryanthemums, the South African M. Bolusii, seeks by its stony branches and bizarre shape to escape observation. On yet another rocky ledge are the other succulents—Opuntia, Cereus, Euphorbia, etc. These were planted only a year ago in ground trenched six feet deep and well manured, and they have responded wonderfully to a treatment which they must have experienced for the first time since the days of Cactus creation. Through the lower part of the garden the old Roman road which served till Napoleon made the new one, may be marked here and there by the ranks of Italian Cypresses; close, and dwarfed doubtless by the incessant tread of Roman legions, these gracious trees give, as all travellers know, impressions of strangeness and stateliness which no other tree can impart to the garden or the landscape. Further away, one slender giant stands alone; this specimen of Cupressus sempervirens is the most perfect we have seen. Its whitish trunk, not more than one-and-a-half foot through, rises as a smooth column for some twenty-eight feet, and then carries its close, dark-green, almost black, branches, to a height of over one hundred feet, and although so high, it is slender. Mr. Braggins, the gardener, who knows his plants so well, and loves them no less, showed us how the seedlings of this Cypress behave in the nursery. Some fifty per cent. have the slender habit so desirable for specimen trees, and fifty per cent. are more branching and so do well enough for hedges, for which use, indeed, the market gardeners all along the windier parts of the Riviera constantly employ them as wind screens for the early crops of flowers and vegetables. La Mortola is a tree and liana garden. Bauhinia grandiflora, which, later, will bear its white flowers flushed with pink, is now only in leaf and fruit. Over many of the trees climbs one of the most beautiful of all Buddleias, B. madagascariensis, with panicles of orange flowers. Not far away is Ficus pumila (stipulata) with its dimorphic leaves; young, flattened on one another mosaic-wise, and the older, on the fertile branches, larger and often taking on a golden-yellow colour. But towering above all the other trees is the noblest specimen of the most graceful of all Pines, Pinus canariensis—a giant. And yet, as though to show that in Eden serpents are indigenous, Mr. Braggins pointed out, high up at the top, the gleaming white cocoon of the Procession Caterpillar—an enemy which must be destroyed on sight; for these caterpillars make pilgrimages of devastation, moving in single file, in a procession of death-dealing devotion; they devour every living shoot and bud of the Pine as they meet it. If the leader of the procession is destroyed the next one takes the lead, and so no halt is called to the destruction which they work. Very graceful are the Casuarinas, *e.g.*, C. torulosa and C. stricta, with greyish, dependent branches, while curious with red "berries," recalling the Yew, is the scrambling Ephedra altissima which greets the visitor by the entrance gate. All the world meets at La Mortola. There is the Ephedra from the east and the Banksia from Western Australia. Chimonanthus fragrans in full flower shows here what a lovely plant it may make, while Photinia serrulata, after the frost had killed its old leaves, is making amends by sending out new shoots of shining-brown, like kid dressed for ladies' shoes. Shoots of the white Genista monosperma make a little sad the traveller who will miss in his own garden the flowering of Cytisus praecox. Pittosporums with their good evergreen leaves abound, one of the most shapely—a dome-like treelet—is P. coriaceum. But of all the striking objects in January, apart from those already mentioned, the one which impresses itself most on the mind is a leafless tree of Melia Azedarach covered by panicles of yellow berries gleaming like amber in the sun. It is the Holy Tree of India and China—from the berries rosaries, or their eastern equivalent, are made. Down below, on the flatter ground, are all manner of Oranges and Lemons. Oranges with exquisite fragrance and flavour, and Lemons of a sweetness which must be tasted to be believed. Coming away from these fragrant trees there is yet another deliciously fragrant scent exhaled by an inconspicuous Buddleia with small, creamy flowers, that is worth a place in any garden by reason of its odour. Mr. Braggins, whose observation is close, assures us that this plant might well succeed on the top of a rock wall in full sun in England, and there it is our pious hope to try it, both for its own sake and in remembrance of La Mortola. Of lesser plants in flower, mention must not be omitted of Aster (Diplopappus) filifolius, flowering now and all through what passes as winter on the Riviera. Another small plant which deserves notice because it does successfully what few plants do—ornaments a vase—is Cotyledon multicaulis, now in full flower, succulent and of a red-bronze tint. Pages might be written of the many vegetable curiosities which may be discovered in this garden. For example, Pittosporum procerum, from Australia, with such brittle wood that but to lift a branch is to snap it; Gardenia Thunbergia with fruits of shape and mottling of a duck's egg; Doryanthes Palmeri, an Amaryllid, the inflorescence of which needs two men to lift it; and Pittosporum phillyraeoides, beautiful as well as curious, weeping, Willow-like. Most tropical of aspect, with a wealth of epiphytes, is Ficus glumosa, sending down its aerial roots after the manner of so many trees of that genus. Of the many Acacias, at least one may be referred to, Acacia Hanburyana, which could we but read its leaves aright, would tell of strange ancient vicissitudes. The young, pinnate leaves are of many-paired, delicate leaflets, the old consisting only of a phyllode—a broadened, entire and flat leaf-base, somewhat leathery. Lastly, as the most hospitable of hosts and hostesses allows us to rest in the house which looks over the blue sea, we may, if we choose, wash our hands with the bruised leaves of the Soap Tree, Quillaja Saponaria, which, with water, makes a scented lather. Thus, after a brief rest, we pass out again, accompanied by Mr. Hanbury, who delights in nothing more than to find the garden which lies so near his heart appreciated, and who points out all the fine things which his father did and leaves the visitor to find out those which he himself is doing; and so presently ends a visit which, though it may not be adequately described, must always remain in grateful remembrance.

Our Supplement Plate.—At this season of the year when so many people are enjoying themselves on the Riviera, the stay-at-home folks may be interested in the conditions under which the more favoured persons are wintering. Our Supplementary Plate depicts a view of Nice, as seen from the terrace gardens of La Selva, where the Palms, Cordylines, Eucalyptus, Cypresses and other subjects provide a picture that is almost tropical in its beauty and luxuriance.

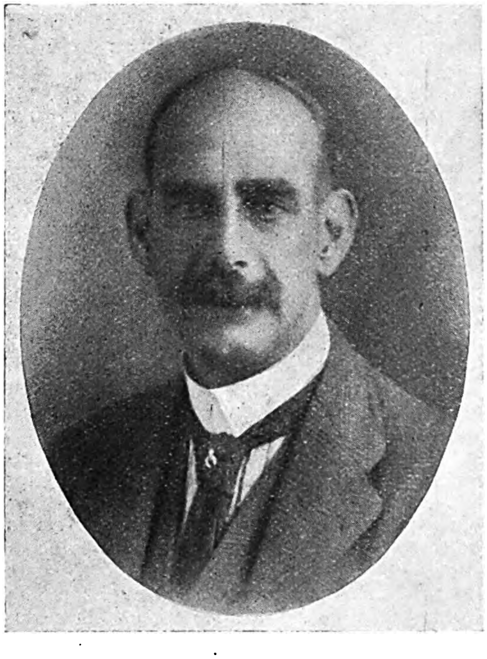
British Florists' Federation.—The Annual Meeting of the British Florists' Federation held at the Restaurant Frascati, Oxford Street, London, W., on Friday, January 27, was a very interesting and successful function. Mr. J. Artindale was elected President for the ensuing year, and at the conclusion of the general business Sir James Slade gave an address, on glasshouse rating. During the evening Mr. Artindale presided at the well-attended and thoroughly enjoyable annual dinner and concert. Pressure upon our space prevents us from giving a detailed account this week, but we hope to publish a full report in our next issue.

National Chrysanthemum Society.—The Annual General Meeting of this Society will be held at Essex Hall, Essex Street, Strand, on Monday, February 6, at 6 p.m.

Scholarships at Wisley.—A Scholarship for two years (commencing in the autumn of 1928) of the value of £50 a year, is offered by the Royal Horticultural Society, and will be awarded on the results of an examination designed to test the candidates' ability to profit by a course of instruction in horticulture. In 1928 the examination will be held on Wednesday, May 2. Candidates must be of the male sex and between the ages of 18 and 22 years on October 1, 1928. The scholarship will be tenable for two years, of which at least the first year must be at the Society's School of Horticulture at Wisley. The second year may, in certain circumstances to be approved by the Council, be spent in education elsewhere. Candidates must either have obtained a school-leaving certificate or have been already engaged in horticulture for at least two years before October, 1928. A similar scholarship (commencing in the autumn of 1929) will be offered by the Worshipful Company of Gardeners. A Scholarship of £30 a year for two years, established by Sir James Knott, Bart., is also offered for award on similar conditions. Candidates must be able to produce certificates of good character, and must be of good health and physique, free from any physical defect that would militate against a career as a gardener, and willing to subject themselves to the rules for students at Wisley. Candidates must enter their names on or before March 31, 1928, with the Secretary, Royal Horticultural Society, Vincent Square, London, S.W.1., from whom entry forms may be obtained. An entry fee of 5s. must be sent with the completed form. One scholarship, tenable for two years, carrying remission of fees and a maintenance grant up to £85 a year (depending upon circumstances) is also available at Wisley for young gardeners with at least three years' experience in private gardens or nurseries, and the appointment to this scholarship is made after due consideration of experience, attainments, and other circumstances. This Scholarship is available to commence in October, 1928. Candidates should send in their applications before August, 1928, on forms which (with further particulars) may be obtained from The Director, R.H.S. Gardens, Wisley, Ripley, Surrey.

Intervarietal Differences of a Chemical Nature in Mature Potato Tubers.—Mr. T. P. McIntosh writes: "Potato tubers contain certain compounds which, when acted on by alkalies, *e.g.*, ammonia, turn yellow, owing to the formation of an alkali salt. However, all varieties do not possess these compounds in the same degree, hence by a colorimetric method varieties may be grouped into several classes. Some varieties show only very faint colouring, such, for example, are Puritan, Eclipse and Edzell Blue; others are always pigmented deeply, *e.g.*, Cardinal, Arran Comrade, Majestic, etc.; and others again occupy an intermediate position, *e.g.*, British Queen, King Edward and Up-to-Date. A colour chart is in preparation, and the reactions of all common commercial varieties will be reported at the termination of the tuber season.

Mr. J. Artindale.—One of the best-known of horticulturists in the Midlands is Mr. J. Artindale of the firm of Messrs. W. Artindale and Son, Castlefolds Market, Sheffield, who has been elected President of the British Florists' Federation for the ensuing year. For many years Mr. Artindale has been a member of the Council of the Federation, and has done excellent work on its behalf. He has taken a particularly keen interest in Gladioli during recent years, and has cultivated them and also exhibited them with great success at many of the larger horticultural exhibitions. Mr. Artindale is also a Member of the Council of the Horticultural Trades Association, consequently he has a busy year in front of him, both in the conduct of his business and the service of his brother florists and nurserymen.



MR. J. ARTINDALE.
President of the British Florists' Federation.

The late Mr. J. Cypher.—Miss Ethel Cypher, daughter of the late Mr. John Cypher, asks us to express her thanks to all the friends who sent expressions of sympathy and forwarded beautiful flowers.

Plant Disease in Scottish Gardens.—Following on the proposal made by Mr. Richardson at the last Annual Meeting of the Royal Caledonian Horticultural Society, a deputation of the Council laid before the heads of the Board of Agriculture certain proposals which, if adopted, would lead to the control of insect pests and diseases of plants in Scottish gardens. The representatives of the Board were entirely sympathetic with the movement, and on their suggestion the following advisory Committee has since been appointed:—Messrs. W. Cuthbertson (Royal Caledonian Horticultural Society), J. Cairns (Glasgow and West of Scotland Horticultural Society), David Low (President of the Edinburgh Market Gardeners' Association), Professor Wright Smith (Edinburgh Botanic Garden), Dr. McDougall; Mr. R. L. Scarlett, Inveresk; Professor Drummond, Glasgow; three representatives of the Board of Agriculture, and a representative from the Lanarkshire Fruit Growers' Association and the Dundee Horticultural Society. At the first meeting of the Committee it was agreed to co-opt two additional members and appoint assessors, and their initial investigations have been directed towards the diseases of bulbs. The question of the compulsory suppression of plant diseases in Scotland has also been before the Committee, but, according to Mr. Scarlett's statement at the last meeting of the Royal Caledonian Horticultural Society, the official attitude was that anything of a compulsory nature would require serious consideration, because once compulsory measures were introduced, no one knew how far they might go. Meantime the onus lies with the public to notify the Board of Agriculture of the presence of disease on plants, or to bring the matter before the local Horticultural Society.

Support for New Sugar Beet Factories.—In October, 1927, the Minister of Agriculture was informed from responsible quarters that finance had been secured for the erection in 1928 of a group of four new Beet Sugar factories in Lincolnshire, Somersetshire, Bedfordshire and Staffordshire respectively, subject to sufficient guarantees by farmers of an adequate acreage of Sugar Beet to support the factories being forthcoming. Each factory would require a minimum of about 10,000 acres of Sugar Beet. In the Ministry's view, it cannot be too strongly emphasised that Sugar Beet is a direct revenue-producing crop, and that an extension of its acreage is calculated to exercise a stabilising effect on the acreage, and consequently on the price, of another very important crop, viz., Potatos. Sugar Beet has the further advantage that it may replace Mangolds and Turnips in the rotation without detriment to the supplies of animal food. This is clear when it is remembered that the by-products of Sugar Beet—leaves, crowns and dried pulp—bulk largely per acre, and form a valuable source of food both for cattle and sheep. In experiments conducted up and down the country last year, yields of leaves and crowns up to twenty-four tons per acre, or so much as a good crop of Kale, have been obtained. It should be remembered also that on some of the larger and most successful arable farms in Germany which carry considerable acreages of Sugar Beet, no crop whatsoever is grown specifically for consumption by livestock; a typical rotation is Potatos, Wheat, Sugar Beet, Barley. The Beet tops, the Sugar Beet pulp, and the straw, are utilised for feeding purposes, and all the crops are sold. Turning to a review of last season's crops, farmers will appreciate that in spite of the bad year for agriculture generally, Sugar Beet suffered relatively less than most other crops, and in some cases was the only paying crop grown. Many farmers in the established Beet-growing areas are at present receiving their cheques from the factories for last year's crop, and may in some cases be able to give a personal confirmation to this statement. The attitude of some farmers in the areas of the proposed new factories is to wait until seed-time is nearer before they decide whether they will put land down to Sugar Beet or not. This attitude can be understood, but the Ministry desires to point out that it may be fatal from the growers' own point of view, as they may find, when seed-time arrives, that the promoters of the new group of factories will have withdrawn their offers. Farmers in the new areas who intend to grow Sugar Beet this year are advised therefore to sign their contracts at once.

The New Forest.—At a meeting of the London Hampshire Society, held on January 24 at Les Gobelins Restaurant, London, W., Lord Montagu of Beaulieu spoke on the subject of "The New Forest." Lord Montagu, who is a member of the Advisory Committee appointed to confer with the Forestry Commission as to the best means of preserving this national beauty resort, stated that the report of the Committee and the Commission's reply would shortly be published, when it would be found that eighty per cent. of the suggestions made had been approved. The old woods need have nothing done to them, as they are safeguarded by the Act of 1877—the Charter of the New Forest—and they would continue to regenerate, as they have done for hundreds of years. Lord Montagu is satisfied, from recent personal observations, that there never have been more beautiful young trees coming on than there are at the present time. He stated that the Forestry Commission had considered the New Forest with the primary object of making it pay, whereas the Advisory Committee had looked upon it as a natural park, the beauty of which, at all costs, must be preserved for the benefit and enjoyment of the community; they thought that the question of making or losing money was of secondary importance. Lord Montagu announced that they had scheduled most of the old wood areas, inside the enclosures, for preservation. They also claim that enough Fir trees have been planted, as Fir plantations are largely hostile to bird and insect life, and they have entered a plea for the non-Coniferous trees. He considers that the authorities have now realised their duties in regard to the control of the New Forest in the interests of the general public, and with due regard to the rights of the commoners.

Ghent Floralies.—The proprietors of *The Gardeners' Chronicle* are presenting a large Gold Medal to the organisers of the Ghent International Exhibition, to be held in April next. This medal will be awarded to the raiser of the best new plant introduced since the Quinquennial Exhibition of 1923.

Method of Drying Flowers.—Our Belgian contemporary, *La Tribune Horticole*, gives, in the issue for January 21, a method of drying and preserving flowers which may be of interest to certain readers, although to some the procedure will be already familiar. The first step is to procure some fine, perfectly clean, sand, dry it thoroughly, thinly spread it on a plate of steel or iron, and while still warm, incorporate with it 20 grammes of stearic acid and 20 grammes of spermaceti to every 20 kilogrammes of sand; these materials will melt with heat, and will mix thoroughly with the sand. Place the plants to be treated with their stems in water, and leave them thus for twenty-four hours, then cut the stems above the level of the water. Procure a box, large enough to allow the specimens to lie at full length, and remove the bottom; insert a false bottom of wire-netting, and replace the original base. Spread a layer of sand in the bottom of the box so that it just covers the netting, then lay the flowers carefully on the sand, taking care to preserve their proper shape, and gradually fill up the box with the rest of the sand-mixture, covering the specimens completely. Place the box in an oven with a temperature of about 40° centigrade for half-a-day; then, after allowing the box and contents to cool for a similar period, remove the false bottom and allow the sand to run slowly away, leaving the flowers resting on the netting. They will be found to retain their original freshness for an indefinite period.

A New Dutch Potato.—After nearly forty years spent in growing Potatos, Mr. G. Veenhuizen, of Sappemeer, Holland, has produced another new variety which in the opinion of many who have tried it is worthy to take rank among the very best. It will be placed in commerce shortly, under the name of Jubileum, which recalls the fact that the raiser celebrated his seventieth birthday in November, 1927. The seed parent of the new variety is Excellent, the pollen parent Monopol; it is a seedling of 1923. The foliage is of moderate height, and of a light green colour; the flowers are white and freely borne. An important point is the almost complete immunity of the foliage from Phytophthora. The harvest period is from the middle to the end of September; the tubers are round and flattish-oval, the eyes flat, and the colour, both of skin and flesh, yellow. It is a well-formed, attractive-looking, mealy Potato, not inclined to scab; after three years' cultivation on the trial ground of Dr. Oortwijn Botjes at Oostwold it is pronounced to be resistant to Wart Disease. The variety yields well, and the starch content of the tubers is unusually high. It is thought to have an excellent future in the light, sandy soil of Holland. For clay lands it would probably ripen too late to be of especial value.

Branching in Palms.—In the *Kew Bulletin* (Part I, 1928), Mr. M. T. Dawe describes a remarkable instance of branching in Palms. In Sierra Leone he discovered a large example of Elaeis guineensis—the Oil Palm—which at six feet from the ground formed eight branches. Six of these produced straight, tall stems, while two others were again branched. It is well-known that branching is a rare occurrence in Palms, and this rarity is emphasised by the fact that the specimen discovered by Mr. Dawe is regarded as sacred by the people of the Koya country, where it was found at Pa Lokko; indeed, Mr. Dawe had the greatest difficulty in persuading the natives to clear away the undergrowth in the immediate vicinity of the Palm. A fine illustration of this branched specimen accompanies the description.

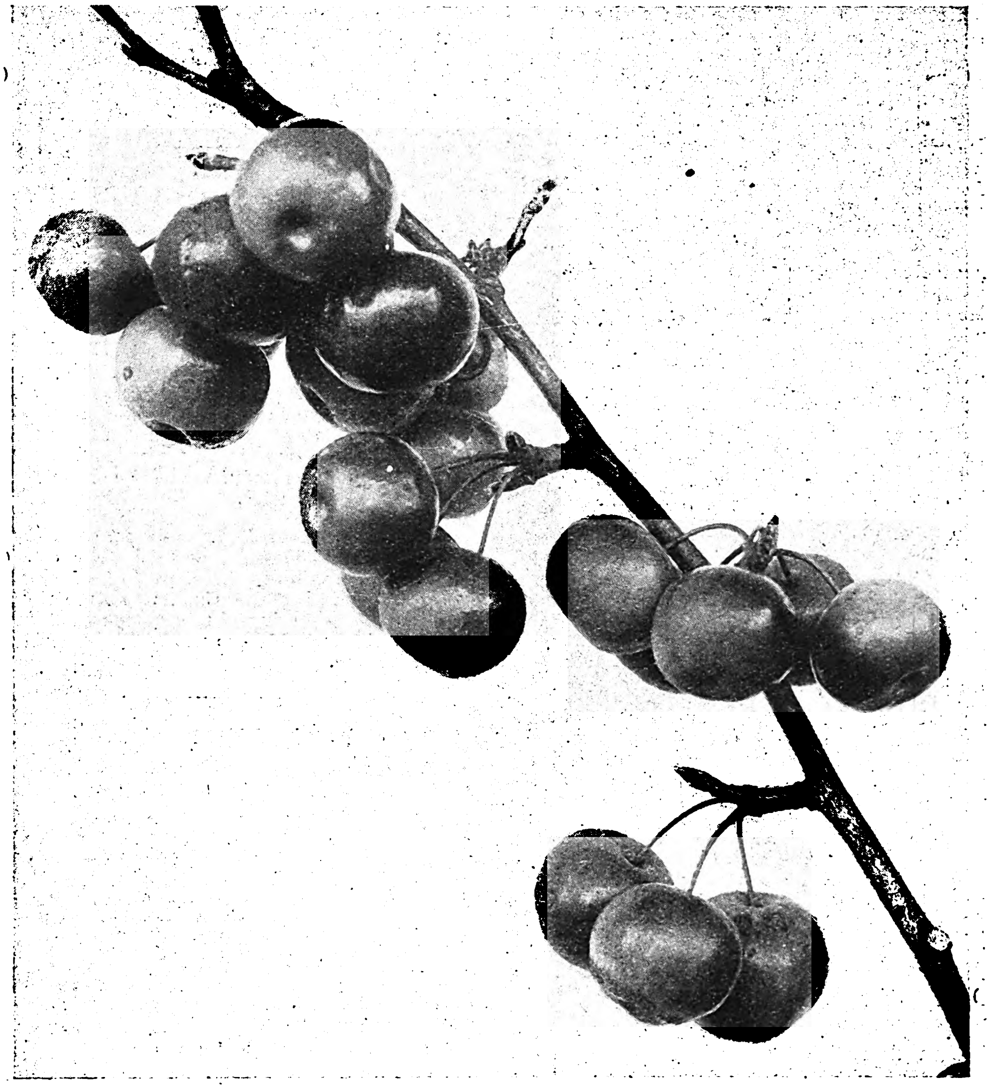


FIG. 44.—FRUITING BRANCH OF PYRUS BACCATA.
(see p. 78.)

Appointments for the Ensuing Week.—Sunday, February 5: Wakefield and North of England Tulip Society's meeting. Monday, February 6: National Chrysanthemum Society's Annual Meeting, Essex Hall, Strand; Romsey Gardeners' Association's meeting; Birmingham Gardeners' Mutual Improvement Association's meeting. Tuesday, February 7: Royal Caledonian Horticultural Society's meeting. Wednesday, February 8: Sheffield Chrysanthemum Society's meeting; London Gardens Guild lecture; Wimbledon Gardeners' Society's meeting. Thursday, February 9: Leigh-on-Sea Horticultural Society's lecture. Friday, February 10: Manchester and North of England Orchid Society's meeting; Royal Horticultural Society of Ireland meeting.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Euphorbia jacquiniflora.*—Allow me to offer a few remarks upon this valuable winter-flowering stove plant, which, if well managed, in my estimation, stands unrivalled. Nevertheless, one scarcely ever meets with a well-grown plant; they are generally very tall and deficient of good foliage; the only point left to recommend them is their long wreath of orange-scarlet blossoms near the ends of the shoots—certainly an object worthy of admiration, but how much more would the plant be admired if it formed a well-grown bush, displaying its fine dark green pencilled foliage along with its beautiful flowers. How easily might such a plant be produced by merely stopping the points of the shoots when young. I am aware that many consider it wrong to stop this plant, or Begonia fuchsioides; but as I have tried both ways, I certainly give the preference to stopping. I have at the present time plants grown on both plans, so that I am well able to judge which of the two is the better. *E. Bennett, Perdiswell. Gard. Chron., January 29th,* 1853.

Publication Received.—*The British Journal Photographic Almanac,* 1928; Henry Greenwood and Co., 24, Wellington Street, W.C.2; price 2/- net.

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN MOORE, Manchester.

Newly Imported Vanda coerulea.—Plants of this beautiful autumn-flowering Orchid are now being imported, and if any are received direct from the cases they should be carefully examined for insect pests, removing these and also any decayed portions, planted in suitable pots, and held in position by a stake and broken crocks, and placed in a cool, airy house. Gradually accustom them to the light and keep them dry. After about fourteen days they may be potted, leaving some of the crocks for drainage, and filling up with Osmunda fibre, a little Sphagnum-moss and broken crocks. Give them a light, airy position in the intermediate house, and spray lightly on bright days, but the roots should not be watered until signs of activity are noticed; as roots and growth advance, an increased supply will be needed; When established, they should be shaded only during very hot sunshine, and air should be admitted day and night to keep the atmosphere buoyant.

Cypripediums.—The autumn- and winter-flowering members of this genus are a leading feature in many collections and often grown in quantity for cut-flowers and decorative work. The flowers are very serviceable, as they remain fresh for a long period, both on the plant and when cut and placed in water; furthermore, they are not easily damaged by fog, and are therefore desirable subjects for growing near large towns. With the large and varied range of long-stemmed, well-coloured varieties, which may now be had at such moderate cost, one is surprised to see in so many of the leading florists' windows, in northern towns especially, numbers of the short-stemmed, dingy-coloured varieties. Many of the plants have passed out of flower and may now be repotted or top-dressed. When potting the larger plants, it is advisable to part the rhizome between the second and third growth from the lead to induce the back growths to break more readily. Use clean pots, with about one inch of drainage material, and a compost of equal parts good fibrous loam, A.1. fibre, cut moderately fine, one part Sphagnum-moss, and a liberal quantity of crushed crocks. One or two of the leads may be arranged towards the centre of the receptacle. The potting material should be previously warmed; work it carefully and firmly amongst the roots, keeping the base of the plant just below the pot rim. After potting, keep the plants in a humid atmosphere, and water them carefully until they are well established, when copious supplies of moisture will be required. Cypripediums may be grown in an intermediate house with a minimum temperature of 55°. During hot weather 80° is not harmful if humidity, ventilation and shading receive careful attention. Sufficient shading to prevent the sun scorching the leaves will result in the production of flowers of good quality.

THE KITCHEN GARDEN.

By ALLAN FALCONER, Gardener to the CHEADLE ROYAL MENTAL HOSPITAL, Cheadle, Cheshire.

Onions for the General Crop.—Experience has convinced me that the method of sowing seeds direct in the open ground, is, in many districts, not so remunerative as planting from boxes. The extra labour entailed in sowing, growing in boxes, and planting out, is more than repaid by the saving of seeds, the increased weight of the crop, and the reduction of the risk of failure to a minimum. Sow the seeds during the first week in February, in boxes filled with a compost consisting of two parts loam, one part leaf-mould, and one part Mushroom-bed manure, with a sprinkling of sand and wood-ash, the whole having been passed through a half-inch sieve. The soil in the boxes should be made firm and watered after the seeds are sown; if they are placed in a temperature of 50° germination will soon take place. When the seedlings are about two inches high they may be moved to a frame and gradually hardened off, ready for planting towards the end of April. If the seeds are sown thinly, no pricking out will be necessary; with careful management, good sturdy plants will be produced by planting time. Six ounces of Onion seeds, sown in forty seed trays, will produce 20,000 plants suitable for planting direct from the boxes. Good cultivation is necessary, and the ground should be prepared either by trenching or double digging early in the year, to allow it to become pulverised and settled. The Simar roto-tiller is an excellent machine to use where large areas of land have to be cultivated.

Horse Radish.—Suitable thongs should have been made from the roots of Horse Radish at lifting time; these, if made about nine inches long, trimmed, and laid in sand, will be ready for planting in March. In the meantime, if ridges of good soil are made about two feet six inches to three feet wide by two feet deep, on some hard surface on which a good layer of manure has been placed, and the thongs planted one foot apart before the middle of March, good sticks, ready for use, can be grown by the following winter in a clean and methodical way. By making up one bed and breaking down another, a continuous supply is always available.

Broad Beans and Peas.—Sow seeds of both these vegetables in boxes if the ground intended for their culture is heavy and cold, for they are liable to rot if sown too early under such conditions. A temperature of 50° is quite suitable for germination, but directly germination takes place they must be removed to a frame from which frost may be excluded.

General.—Seeds of Tomatos should be sown for succession and to replace any failures with the early-raised seedlings. Preparation should be made for planting the Cucumbers that were raised at the beginning of the year; where sufficient heat is available the use of hot-beds is of no advantage.

FRUITS UNDER GLASS.

By T. PATEMAN, Gardener to SIR CHARLES NALL-CAIN, Brocket Hall, Hertfordshire.

Vine Borders.—Any outside borders that need renovating should be attended to during mild, open weather. Remove the surface soil until young, fibrous roots are found and fill in with good loam, to which may be added a liberal quantity of vine-border compound. Guard against a heavy top-dressing with new soil, as this will be detrimental to surface rooting. Any Grapes that are still hanging on vines should be removed and placed in bottles; failing a Grape store, they will keep for a considerable time in a dry room.

The Cold Orchard House.—Trees growing in borders in the cold orchard house, such as Pears, Peaches, Plums and Cherries, that have not been cleansed and pruned, should be attended to at the earliest opportunity. The trees, at the time of writing, appear to be somewhat later than usual, but it is surprising how quickly their buds will expand if a spell of bright weather arrives, therefore the work of washing both the trees and the house may be carried out in a thorough manner so soon as possible. After the work of cleansing has been accomplished no time should be lost in fastening the growths into position, but before doing so, it is advisable to spray the trees with a nicotine solution as a preventive measure against aphis attacks, while the walls of the house may be coated with a mixture of lime and sulphur, care being taken to work the preparation well into the crevices. When this work has been completed, proceed with the top-dressing of the borders, but before doing so remove a small portion of the top soil. The remaining soil may then, if necessary, be thoroughly watered, for at no season of the year should fruit trees suffer through lack of moisture at the roots. Next, I would suggest a sprinkling of bone meal, and then the top-dressing of turfy loam, mixed with charcoal or ash from the garden fire. See that the borders are not lacking in lime, for this is a most important factor where stone fruits are concerned; being an inexpensive item, I fear that a great many gardeners fail to use it in moderate quantities, so often as they might. Finally, cover the top-dressing with a thin layer of short manure, which will allow the water to penetrate evenly into the border. I do not recommend a heavy dressing of manure at this season of the year, as it tends to prevent the passage of air to the roots; a second dressing may be applied during the summer. It is advisable to keep the house cool, to retard growth, if possible, for when the trees are in flower there is no protection against late frosts, other than the closing of the ventilators.

PLANTS UNDER GLASS.

By J. COUTTS, Assistant Curator, Royal Gardens, Kew.

Lobelia tenuior.—Seeds of this beautiful blue-flowered Lobelia may be sown now. The seedlings, when fit to handle, may be pricked into sixties, putting four or five in each pot. Later, they may be potted into five-inch pots, a suitable receptacle in which to flower them. The plants, being tall and slender, will require support, slender twigs being useful for this purpose, and, as with all half-hardy annuals that are grown in this manner, cool, airy treatment is essential.

Asclepias curassavica.—If seeds of this useful plant were sown last autumn, the young plants should be ready now for moving into their flowering pots. Seeds sown now will provide plants that will give an excellent display towards the end of the summer and early autumn. This Asclepias grows freely in good compost, and is most effective if four or five plants are grouped in each pot.

Sparmannia africana.—This old garden plant deserves to be more generally grown for flowering in the conservatory during the winter. Plants raised from cuttings rooted now will make useful examples by next winter, but this Sparmannia is only seen at its best when several years old. It is very beautiful if grown as a standard. When they have finished flowering the plants may be pruned hard back and started into growth again in a house that is kept moderately close and moist. During the summer months they should be stood out-of-doors, to be brought in again about the middle of September. The clusters of beautiful yellow and reddish-coloured stamens are the chief attraction of the flowers; these have an attractive habit of opening out into a round ball when irritated.

HARDY FRUIT GARDEN.

By T. E. TOMALIN, Gardener to the EARL OF BESSBOROUGH, Stansted Park, Emsworth, Sussex.

Morello Cherries.—If the pruning and tying of these was not completed during the autumn, advantage should be taken of the first spell of mild weather to finish this work. The Morello Cherry fruits on young wood of the preceding year's growth, therefore so much of the older wood as can be spared should be removed and its place taken by young wood, which should be arranged evenly over the available wall space at from four to six inches apart. The regular, heavy crops borne by well-managed trees of the Morello Cherry necessitate generous treatment to maintain them in active growth. A liberal dressing of good manure should be applied every second year, and in alternate years the border should be liberally dressed with lime, forked in lightly. When all has been put in order, spray the trees, during early February, with a five per cent. solution of tar distillate wash, and so ensure a clean start for the season.

Apricots.—Since wall-trained trees of this fruit often commence to flower in February, any necessary pruning and training of the trees should be completed forthwith, in order that all may be in readiness when the time comes for fixing the coverings to protect the blossoms from frost. Apricots bear the finest fruits on spurs formed on the older branches, but they also fruit on growths made during the previous year; therefore, a proportion of these should be tied in full length to replace older branches which may have become unprofitable. The less Apricot trees are cut at this season the better, but all dead wood must be removed. Much may be done during the growing season to form and maintain an evenly-balanced tree, by the stopping of strong growths and the pinching back of lateral shoots to form fruit spurs, but I am convinced that it is a mistake to attempt with Apricots the same rigid fan-formation that may be practised in the case of Plums. The Apricot resents close restriction; if freedom of growth is allowed, less trouble with "gumming" and the consequent loss of branches will be experienced, while better crops will be obtained. Given the shelter of a good wall, and a well-made border to root into, the Apricot will succeed in any aspect except one facing north. If an easterly aspect is chosen, the coverings must be left on until a later hour on bright, frosty mornings when the trees are in flower. The border should be four feet wide and well provided with drainage material at the bottom. The soil should consist of good loam, to which plenty of mortar rubble and a sprinkling of bone-meal have been added, but the use of organic manure should be avoided until the trees are carrying crops of fruit. Plant firmly, as with all stone fruits, and not too deeply. Trim off all broken roots and jagged ends with a sharp knife, and lay out the roots horizontally, the top layer being covered to a depth of three to four inches only. Regular lifting and root-pruning every second year is essential for some time with Apricots, but this operation is one for the early autumn, and will be fully dealt with at the proper time. Good varieties which will provide a succession of fruits are Frogmore Early, Hemskirk, Peach and Moorpark.

THE FLOWER GARDEN.

By J. G. Weston, Gardener to the Duke of Devonshire, Chatsworth, Bakewell, Derbyshire.

Herbaceous Plants in Beds and Borders.—Although the autumn is much the best time to trench and prepare new borders, or to renovate existing ones, provided the weather is favourable, there need be no hesitation in undertaking this work in the spring; indeed, on some soils it may prove to be the best time. The preparation of ground by trenching and manuring for new beds and borders, is comparatively simple, compared with that of the renovation of existing ones. When lifting the plants, care must be taken to label and lay them in soil, or much confusion and loss may arise when replanting. Many plants, if not too large for their position, nor showing signs of exhaustion, are better left undisturbed, as, for instance, Paeonies, Alströmerias, Liliums, Spiraeas, Aconitums and Anemone japonica varieties. These are plants that resent frequent disturbance; they should only be transplanted when showing signs of deterioration. Healthy specimens should be carefully forked round and have some decayed manure and leaf-soil worked into the soil. Most of the plants are gross feeders and well repay a little extra attention in this respect. Other perennials derive much benefit from being lifted, divided and replanted in trenched or deeply-dug ground. This class includes perennial Asters, Soldidago, herbaceous Phloxes, varieties of Chrysanthemum maximum, Heleniums, Achilleas and Monarda didyma.

Replanting.—When dividing and replanting herbaceous subjects, use small, healthy pieces from the outside of the clumps. It is a great mistake to replant old, large clumps. If large groups are required, plant the requisite number of small pieces. Plant firmly, and after the work is completed mulch the border with sifted leaf-soil, which will be of the greatest assistance. This will not only keep the roots moist during the drying winds of spring, but will ensure a moderately fine loose surface throughout the summer

FOR NORTHERN GARDENERS.

By A. T. Harrison, Gardener to the Marquis of Ailsa, Culzean Castle, Maybole, Ayrshire.

Antirrhinums.—Where these popular bedding plants are raised annually from seeds, the present is a most suitable time to make a start; the seeds should be sown thinly in boxes or pans; if boxes are used, it is usual to divide the space so that two or three varieties may occupy one box, but it is better to use either smaller boxes or seed-pans for each variety, as they do not all germinate with the same regularity. Many splendid varieties of Antirrhinums are now procurable, that come practically true to colour from seeds, and it is now possible to make extensive colour schemes with these alone. Being hardier than many other bedding plants, they may be planted out earlier, and will remain in good condition later in the season than the more tender subjects.

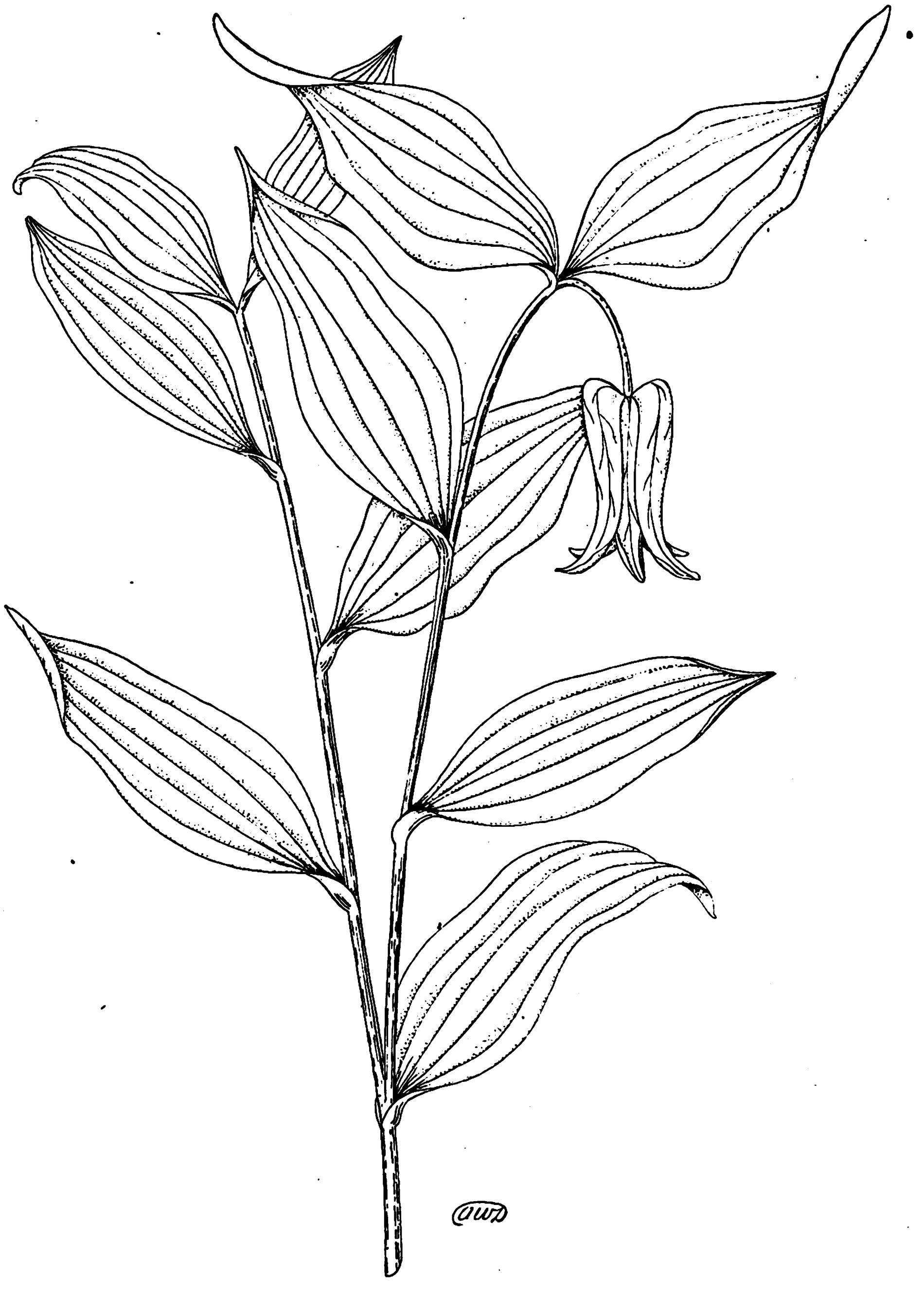


FIG. 45.—DISPORUM OREGANUM.
(see p. 80).

Lobelias and Ageratums.—If these are required for edgings, they may now be raised from seeds, for although it was customary at one time to propagate both these plants from cuttings, so that uniformity in colour and size could be maintained, it is now possible to procure seeds of varieties wherein both these characters are fixed.

Vegetable Seeds.—Where Leeks are grown for exhibition, or where large Leeks are preferred, a sowing should be made now under glass, in boxes, prepared in a similar manner to those used for Onions. The young plants should be pricked out singly, either in small pots or boxes, in rich soil, and kept growing on steadily by repotting them when necessary, so that fairly large plants are available for planting out at the end of May or early in June, in well-prepared trenches. Boxes should also be prepared for sowing a number of other vegetable seeds, including Brussels Sprouts, Cauliflowers, Lettuces, Cabbages, etc., taking care to sow these seeds thinly. Often they are sown almost as thickly as Mustard and Cress, with the result that unless severely thinned they become attenuated, or damping off sets in and most of them are ruined. These young plants should be pricked out three or four inches apart so soon as the first pair of leaves is formed; a temporary frame or shelter is capable of protecting quite a large number.

INDOOR PLANTS.

ROOTING ZONAL PELARGONIUMS.

There have been recent references in your columns to the propagation of this section of Pelargoniums, popularly classed as Geraniums. Here, cuttings are always rooted in pure, sharp sand, either on a propagating bench or in shallow boxes containing a layer of crocks or cinders, over which a layer of moss is laid, sand occupying the balance. These boxes, after being filled with cuttings from which the foliage has been well stripped, are usually stood on shelves in a greenhouse, well up to the light, given a good soaking of water, and after that rather lightly moistened until rooted; they are, in fact, kept very much on the dry side until potted, which is often after Christmas plants are out of the way. They are then found to have a great mass of fine roots, and when potted and kept in a night temperature of about 50°, quickly fill the pots with roots. Pelargoniums are never shaded while being propagated, no matter how hot the sun may be; the use of shade softens them and makes them more susceptible to damping-off. In a moist fall, autumn Pelargonium cuttings from out-of-doors are naturally very soft, and some propagators allow them to lay on a bench for twenty-four hours after they are made, thinking this will reduce the percentage of damping-off. Experience has, however, proved that cuttings thus dried do not root any better than those not subjected to this treatment. The loss from damping-off is usually not over five per cent., and from cuttings taken under glass it is almost nil; these latter are so much harder, and this makes all the difference. We find the really important things to remember in propagating Pelargoniums is to water them sparsely until rooted and never to afford shade, no matter how hot the sun may be. *W. Craig.*

JASMINUM SAMBAC.

This fine old plant was, in former days, much esteemed for the delicious fragrance of its blossoms. It should undoubtedly find a place in establishments where sufficient heat is forthcoming to promote vigorous growth and floriferousness. The double-flowered form of this species was most generally cultivated (J. Sambac fl. pl.), and this evergreen twiner produced flowers nearly the whole year round. The plant succeeds in a compost of rich, mellow loam, or loam and peat, well-rotted manure and sand; rather drier conditions are necessary during winter, but during the season of growth this Jasmine revels in an abundance of warmth and moisture, and produces freely its pure white, fragrant flowers. Propagation is effected by cuttings inserted in spring.

J. Sambac is a very old plant in gardens, having been introduced from India in 1665; the double variety is figured in *Bot. Mag.*, t. 1785.

J. gracillimum came from North Borneo in 1881, and soon attained some measure of popularity as a stove plant; the large, white flowers, produced profusely in winter, are very fragrant. It is a small-growing plant.

J. rigidum—or ligustrifolium—is an evergreen Indian shrub that produces a succession of white flowers over a long period.

The variety Duchesse D'Orleans is, perhaps, not now in cultivation; it was of Continental origin and greatly esteemed for its profusion of large, pure white flowers. These beautiful old tropical Jasmines are worth growing if only for the fragrance of their flowers, while their decorative value is of no mean order. *R. A.*

STIFFTIA CHRYSANTHA.

This native of Brazil is an attractive, evergreen shrub, with lanceolate, acuminate leaves and terminal heads of showy, orange-coloured flowers, two-and-a-half inches in length, rising from amongst the long, saffron-coloured pappus hairs. In the Cambridge Botanic Gardens this species is now in bloom in the stove, where it makes a fine display. Stifftia chrysantha requires a light, airy situation, and thrives best in a well-drained, turfy loam. Belonging to the Compositeae, Stifftia is a genus comprising five stove shrubs, natives of Brazil and Guiana; it was named after A. J. Stifft, 1760-1836, the imperial physician of Austria. S. chrysantha is propagated by cuttings inserted in sandy soil under a bell-glass in bottom-heat. *D.H.C.*

CARNATIONS IN THE UNITED STATES.

Last summer was exceptionally wet over a large portion of the United States. While some Carnation growers plant their stock directly from pots or boxes into beds or benches, never allowing plants to go out-of-doors at all, their number is not great. The great majority plant Carnations in the field in late spring, and lift and plant indoors, commencing in July and invariably finishing late in August. One direct result of rain and cloudy skies was a tremendous loss of plants in the field and a further serious loss from stem-rot or other bacterial troubles after housing. A succession of such summers would compel growers to abandon outdoor planting and treat Carnations in pretty much the same way as in England.

There are no very outstanding novelties this season, although the usual number are being offered. More is heard of Hilda than of any other; this is of medium pink colour, and is being introduced by a Denver firm. Shipments of this variety have gone as far as Havana, Cuba, a distance equal to that from New York to Liverpool, and have arrived perfectly fresh, after being *en route* for eight days. The high, dry, mountain atmosphere of Denver evidently produces Carnations of great keeping qualities. White Ward, from the same city, is one of our finest whites. No variety is yet in sight to displace Laddie as a leader, although a new seedling from Mr. C. B. Johnson, of Woburn, Mass., managed to defeat it last year at Columbus, Ohio, where the annual convention of the American Carnation Society was held. Mr. Johnson has a grand, pure-white in Ivory, which is the freest bloomer I have yet seen here; the stems are long early in the season and the much-fringed flowers large: another good point is that the calyx is as nearly perfect as possible. Matchless, which is, perhaps, the most freely planted white variety, has very short stems in the fall, and while it is a great bloomer I am not surprised that it has never attained great popularity in Great Britain. Harvester is doing well with many; it is snowy-white at all times. Arctic is very fragrant and carries a fine bloom, but lacks length of stem and freedom.

Spectrum is easily the leader amongst red sorts; the colour is best described as Holly-berry red or spectrum red. Radiolite, sent out last season, is a brilliant scarlet and is a steady bloomer, the colour also is constant. No other yellow as yet compares with Maine Sunshine in popularity and freedom. In light pinks, the Enchantress section is being gradually eliminated as the varieties lack keeping quality and texture. Pink Delight is less grown; it is difficult to propagate until cuttings are of mature size. While Mrs. C. W. Ward still finds much favour, it splits badly in winter, and Betty Lou has replaced it with many growers and it is now the most largely grown medium pink here. Scepter, sent out last season by Mr. A. A. Pembroke, of North Beverly, Mass., is of nice, warm, salmon-pink colour; it has proved popular, and will be planted freely next season.

Eldora has filled the entire field as a variegated sort; Benora seems to have been dropped out entirely. White and pink sports of Eldora appeared, and both are in great demand on account of their extraordinary freedom. Johnson's Crimson is the leader amongst crimsons. A limited number of Royal, which is royal-purple in colour, is being grown, but in this country the demand is for only a few colours such as pink, in three shades, and white; other colours, including yellow and variegated, meet with a limited sale, while scarlet and crimson sorts are slow sellers, apart from special flower days like Christmas and Memorial Day. Colours which I noted in a number of establishments in England, other than those I have mentioned, do not seem to take on here at all.

While the Rose is steadily forging ahead in popularity in America, the Carnation appears to be losing ground. Methods of culture and marketing, and the fact that flowers keep so poorly as to discourage buying, are the factors causing this reduction. *W. H. Craig, Mass., U.S.A.*

TREES AND SHRUBS.

CHOISYA TERNATA.

The Mexican Orange Flower, as this shrub is popularly termed, was introduced to this country over a century ago, and was at first regarded as a subject requiring stove treatment. Later, it became popular as a greenhouse subject, and finally it was discovered to be quite hardy, and capable of withstanding our winters with impunity. At the present day it may be regarded as one of the finest of our hardy, evergreen, flowering shrubs.

The white flowers are an inch or more in diameter and are produced in small axillary corymbs towards the ends of the shoots; they possess a delightful Hawthorn-like fragrance. April and May is the normal flowering period, but in the warmer parts of the country it frequently produces a second crop of bloom in October and November.

This shrub is not at all particular as regards soil, but a rather light loam is the ideal medium. An open, but sheltered situation should be chosen so as to reduce the risk of damage from spring frosts to a minimum. Cuttings of semi-ripened shoots, inserted in a sandy compost and placed in slight heat, form a ready means of propagation, while cuttings of firmer wood will strike quite easily if given the protection of a cold frame. *T. H. Everett.*

PYRUS BACCATA.

The Siberian Crab is one of the finest trees of its group, as it grows to a considerable size, and when a good specimen is covered during spring with masses of white blossons, forms an object of great beauty. Probably the greatest charm of the Siberian Crab is apparent during autumn and early winter, when its branches are laden with small, bright fruits (Fig. 44). These often remain on the tree long after the leaves have fallen, giving old trees quite a picturesque effect. It is of interest to note that the fruits are extremely bitter when eaten raw, yet, curiously enough, they may be made into a most delicious jelly, having a peculiar flavour that is pleasing to most palates.

Pyrus baccata is one of the best of the smaller trees, and should be planted where room may be found for it, as it serves the dual purpose of being a beautiful object when in bloom during spring and again in autumn when in fruit, while the crop may be gathered and used to make preserves. *R. F. Wisley.*

ORNAMENTAL CURRANTS.

About one hundred years have elapsed since most of the better-known ornamental Currants made their appearance in this country, Menzies and Douglas sharing the honour of their introduction. Familiar as it is, Ribes sanguineum is still one of the finest of early-flowering shrubs, being not only a singularly handsome subject, but one that may be relied upon to bloom profusely with unfailing regularity every year. Some of the named varieties, however, are even superior to the type, both in colour and size of bloom, and the white form, with flowers that are faintly rose-tinted, is by no means to be despised. Though denounced by some as unworthy of a place, I find R. sanguineum albidum very attractive when grouped in thin woodland, especially if afforded a dark background.

R. speciosum is not so well-known as R. sanguineum, but is almost equally as attractive. It is a hardy shrub from western North America, and makes an elegant, open bush six feet or more high. The branches have a reddish tint, and are spiny, while the young wood is densely covered with crimson bristles. Though a deciduous species, R. speciosum often comes into leaf in January and February; indeed, I have known it to become covered with fresh foliage in November. The three- or five-lobed leaves are similar to those of a Gooseberry.

The flowers, produced during April or May, render this shrub a most attractive object. They are tubular, and narrow, and droop beneath the branches in a fringe of rich crimson. Their colour and shape, together with the long, red stamens, suggest the flowers of a Fuchsia—hence the popular name, Californian Fuchsia

Currant. By producing its leaves early, R. speciosum is better able to protect its blooms from spring frosts than is R. sanguineum, which is often devoid of foliage when flowering, and the flowers have the further advantage of being protected by the branches. This species is said to make an attractive wall subject, and as such will probably attain to double the usual height.

R. aureum was one of the first of its race to come to this country, as it was introduced from the central States of North America in 1812. It is a deciduous species, with palmate or three-lobed leaves that are rather larger in size than those of the preceding Ribes. The golden-yellow flowers, appearing in April in short racemes, are conspicuous, and have a spicy fragrance. These, together with the excellent autumn colouring which the foliage develops, are sufficient to give this shrub a high place among the ornamental Currants, but it is seldom seen in gardens. The variety aurantiacum, with bronzy-orange blooms, and a more shapely habit, is even better than the type. Another member of this family that deserves to be more widely known, is R. Gordonianum. This is a hybrid between R. aureum and R. sanguineum, and it portrays the principal features of each parent, the flowers being a reddish-crimson, with an orange-yellow interior. R. Gordonianum was raised many years ago by Donald Beaton, and it is still known to some as R. Beatoni.

Although the genus contains many other species which might claim a place among ornamental shrubs, most of them are subjects for the specialist, rather than the average gardener. There are one or two evergreen species which are interesting; of these, R. Gayanum, is the most notable, but my experience of this shrub only extends to a passing acquaintance with it at Kew, where it is said to be quite hardy, although a native of Chili. It is a handsome shrub, rather under medium height, with yellow, sweetly-scented, bell-shaped flowers borne in dense racemes.

R. viburnifolium is a very charming shrub in its native Lower California, and I have fragrant memories of pushing through thickets of its aromatic foliage on Santa Catalina Island, but it has been so frequently cut back by frost here that I am doubtful of ever seeing its rosy blossoms.

BERBERIS HOOKERI.

This is an useful Berberis for growing on the margins of woodland, or in shrub plantations where a compact, bushy subject, not more than four feet in height, is desired. If not among the most ornamental of its race, it has an attraction of its own, and a certain elegance in the close sheaf of slender growths which rise from the base and, branching near the tops, arch over with no little grace. The leathery, glossy leaves are two inches or more in length and about half-an-inch in width. They are armed with small spines at the margins, and, while their upper surface is a deep, rich green, the undersides may be anything from almost white to pale emerald, there being a good deal of variability in this respect. The flowers, which are produced singly on long, drooping stalks in spring, are a yellow, and over half-an-inch across. These are followed by dark purple berries that generally remain on the branches until the following spring.

To secure the best effect, B. Hookeri should be grown on a slope or other elevated position, for both flowers and fruit hang below the branches. Although a Himalayan species, it seems to be quite hardy, and grows well even in poor, dry soils; it does not resent division as a means of increase, but this should be done for preference in spring. This species has been sent out as B. Jamesoni and B. Wallichiana.

SHRUBBY POTENTILLAS.

Some little while ago, Dr. Lloyd Praegar referred to P. fruticosa as "that kaleidoscopic 'typhus polymorphus.'" If such able authorities as he and others have failed to unravel the tangle in which this species and its varieties are so hopelessly engulfed, what chance is there for the average nurseryman or amateur gardener who desires some measure of accuracy in his identification? It seems high time that this matter was taken in hand by some competent authority. Mr. Bean's great work (*Trees and Shrubs Hardy in the British Isles*) is exceedingly helpful, but we have had many forms of P. fruticosa "unloaded" upon us since it was written, and one has only to refer to P. f. var. Farreri to realise something of the confusion that exists in nomenclature and definition. Can any one, I wonder, say what this variety is, or should be, like? It is obvious that the nurserymen hold various opinions. I am told that the original F. 188 had flowers of a medium yellow, and quite silvery but almost hairless leaves, but I have never been able to secure such a plant. Perhaps, after all, it is expecting too much to ask for infallible guidance in a race of shrubs which, owing to an enormous geographical distribution and, as has been suggested, a predilection to hybridise in a state of nature. Still, one might be justified in proposing some relief from the present muddle, for even clearly-marked forms are by no means generally recognised by the same name.

One of these is the beautiful P. f. Vilmoriniana. This is the strongest grower of all with me, making a rigid bush fully four feet tall. The most distinctive features of this admirable shrub are the large leaves that are very silvery, and the soft ivory-yellow flowers that are above the average in size and substance. P. f. Veitchii (Fig. 46), which I believe was collected by Wilson in Hupeh, is also a variety of outstanding merit. Here it has grown about two feet tall; the flowers are large, pure white, and produced in great abundance, as my photograph shows. The leaves of P. f. Veitchii are pale green, but so covered with fine hairs that they have a greyish tint.

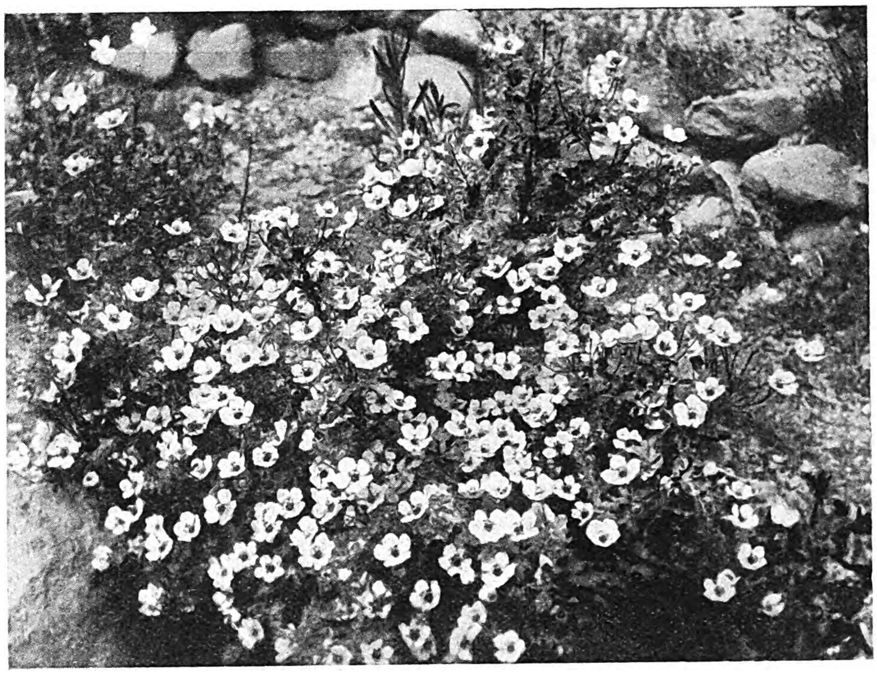


FIG. 46—POTENTILLA FRUTICOSA VAR. VEITCHII.

Purdom's Potentilla, or, it would be safer to say, the shrub usually sent out by the trade as P. Purdomi, is a slender-habited little bush, much after the style of that which we are now accustomed to call P. f. Farreri, and with leaves of as bright a green. But while the latter has rather cupped flowers of a good, deep yellow, those of the former are a keen lemon-yellow, and usually open flat. The plant generally known as P. f. Arbuscula, of lowly stature, and with slender, flopping branches, covered by a brown tomentum, appears to belong to this set. It has very large flowers of an exceedingly bright and rich golden-yellow. Indeed, these are in my experience the best of their colour and the biggest.

Another dwarf of compact habit and much distinction is P. f. argentea nana (Beesianum). This is a charming little shrub with glabrous leaves of a silvery-green and bright yellow blooms borne in succession all the summer. P. f. mandschurica is a very diminutive form suitable for associating with the smaller plants of the rock garden. It has greyish-green leaves, and in poor soil, with full exposure, will yield exceedingly attractive, white flowers, fully an inch across. Yet another lowly form, not much over six inches tall, is P. f. pyrenaica (prostrata), with yellow blooms, and then there is P. f. rigida, another dwarf form with yellow blooms, but this I have not seen. P. f. grandiflora is said to have the finest blooms of all the taller yellow-flowered varieties, but I have not seen a plant in any way answering to Mr. Bean's description. *N. Wales.*

ALPINE GARDEN.

RAMONDIA (JANKAEA) HELDREICHII

I have read with great interest Mr. Baker's note on the above species (p. 42), more especially as it was through my instrumentality that this choice plant was reintroduced to British gardens. Hearing that my friend Dr. Guiseppi intended to spend some six weeks in Crete and Greece during last March and April, partly hunting antiquities and partly plant hunting, I persuaded him to try and locate the Jankaea, which had not been collected for many years, as the mountain range in which it has its sole habitat was also the happy hunting ground of various bands of brigands.

As luck would have it, I had two friends in Greece at the time, and it was Dr. Fischer, a continental medico and plant lover, who reached the home of Jankaea even before Dr. Guiseppi, and sent me home a nice consignment of sound plants, of which I was pleased to present specimens to our principal botanical gardens.

I am afraid this plant will never become a general inhabitant of our rock gardens, as it is not at all easy to find ideal conditions for it. Although in a general way the conditions given to Ramondias and Haberleas will suit it, its vesture of silvery velvet and the thick covering of Jaeger-camel-hair wool upon the reverse of the leaves, converts the plant into a veritable sponge for holding moisture; this may be well enough under a Greek sun but spells certain death in our moist, English climate. On the other hand, the plant resents exposure to drought and intense sunshine, which are very different from the sun-scorched air that soon draws all surplus moisture from the plants on Mount Olympus, where, in the winter, they are cosily tucked away under a permanent blanket of snow. If we could provide similar conditions we should not find much difficulty with this lovely plant. I advise the alpine house as the most suitable place in which to cultivate it.

For outdoor cultivation, the only chance is to plant it under an overhanging rock, a feature of the rock garden so strongly condemned by most writers on this subject, but the pent-house roof such a rock provides is not enough; in addition we shall require a roomy crevice packed with very fibrous peat and loam, intermixed with sharp sand or stone chips and, above all, some arrangement that will allow us to provide moisture to the rooting medium without moistening the foliage, back or front, to any particular extent. A carefully arranged feed pipe of some sort might accomplish this, but precaution would have to be taken to cut off this water supply entirely during the resting period. Mr. Reginald Farrer managed to contrive such a spot for a number of years, but I know his plant died during the unavoidable neglect of the war years, and since then, so far as I can find out, not a single plant has existed in this country.

I hope that the majority of the plants introduced by Dr. Guiseppi, Mr. Baker and Dr. Fischer will survive and even increase sufficiently for the needs of alpine plant lovers without constant resource to robbing the restricted native habitat of this rare species; those remaining at present in my garden have established themselves well, and I hope to flower most of them this May or June. Mr. Baker is in error regarding the shape of the flowers of Ramondia (Jankaea) Heldreichii; they are not salver-shaped like those of Ramondia, but more like those of the Haberleas; Gloxinia-shaped would describe them better; and the colour is a soft lavender with a crystaline texture exceedingly rare in hardy flowers. *W. E. Th. Ingwerson.*

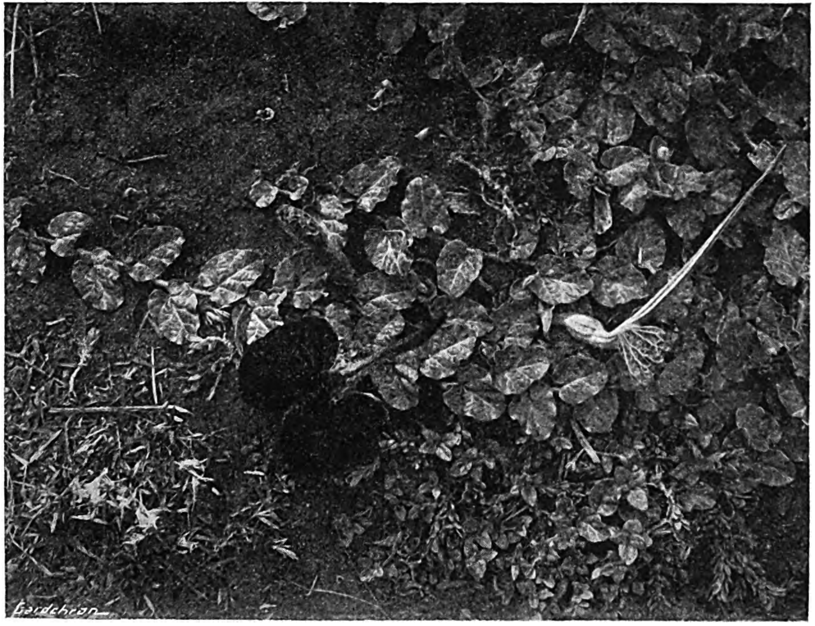


FIG. 47.—ARISTOLOCHIA LINDNERI; NATURAL PLANT.

SYNTHYRIS RENIFORMIS.

This American member of the Natural Order Scrophulariaceae is an useful subject for planting in a cool, lightly-shaded position on the rock garden, in rich loamy soil. It flowers during February and March, and when happily established produces numerous feathery spikes of bright violet-blue blooms, borne on slender erect stems six inches or more in height

Synthyris reniformis (Fig. 50, p. 83) is neat in appearance and forms rounded tufts of attractive leaves that are reniform in shape, with crenate margins, glabrous, and rich dark green, with slender petioles from three to six inches in length. It may be increased by division, although it resents frequent disturbance; in the appearance of its blooms is not unlike a Wulferia, but is considerably more attractive in that it lacks the stiffness usually associated with this plant. S. reniformis is a native of North-western America.

ANDROSACE PYRENAICA.

This Androsace forms a dense tuft of tiny, grey-green rosettes, each producing from its centre one white flower, but this is not of the same purity as the flowers of A. helvetica. The little blossoms are carried on very short stems and are hardly so round and solid-looking as are those of A. helvetica; nevertheless, a well-flowered hummock is a fascinating object.

Like other mossy Androsaces, A. pyrenaica is not easily accommodated on the rock garden; I had, however, for some years, a fine plant growing upon a sunny ledge in gritty soil, and surrounded by a surfacing of chippings, and during the winter it enjoyed the protection of a piece of glass. Usually, this species is happy when placed in a deep fissure between upright rocks, and is even more obliging when domiciled in a pan and grown in the alpine house. It enjoys a little peat in its root-run.

Synonymous with Aretia pyrenaica, this little plant flowers in summer. It is found wild in the central Pyrenees. *Ralph E. Arnold.*

HARDY FLOWER BORDER.

SAXIFRAGA GRANULATA.

The bright green, kidney-shaped leaves of the Meadow Saxifrage are always among the first-comers of the early year, and it is therefore at this season in particular, when there is a minimum of fresh growth, that one is reminded how freely this charming Saxifrage will naturalise. This is, no doubt, brought about by the little round tubers, a handful of which may usually be found close to the surface, and often fully exposed. Although not a rare native, S. granulata seems to be local in its distribution in England, abounding in some districts and being almost absent in others. In the garden, however, it is, as I have suggested, an easy grower under a wide variety of conditions. The rock garden, woodland, border, stream-side and even the bog all seem equally agreeable to it.

There would appear to be several forms of S. granulata, differing in the size and hairiness of the leaves, the arrangement of the flowers on the stalk, stature and other details. The double-flowered variety is, perhaps, the most familiar to gardens, and but for the fact that the blooms may last rather longer, this can scarcely be said to be any improvement on the type. A good representative of the latter is a most delightful and elegant plant. In the strain grown here the flowering stems are often a foot in height, the single, pure-white, bell-shaped, blossoms being about an inch across. One of the prettiest scenes I came across last spring in one of the valleys of the Esterel consisted of a great drift of this Saxifrage, and the reddish-lavender Anemone stellata, which were occupying a wet, mossy slope. *N. Wales.*

COMMELINA COELESTIS.

Like most of the Spiderworts, this Mexican plant is notable for the wonderful colour of its flowers, these being a singularly vivid, clear blue, similar to that seen in Salvia patens. But, although C. coelestis has been in cultivation for well over a century, it is not often seen doing well in the open. I have had it, off and on, for a good many years, and, oddly enough, it made a better effort in our last sunless, rainy summer than it has done for some time. It may sometimes be seen prospering in gardens near the sea, where the soil is sandy, but it is manifestly a fastidious subject. Nevertheless, it has flowers of such a fine colour that it is well worth special care. It would be interesting to know what success other growers have had with it, and whether they lift the fleshy roots and store them during the winter. *J.*

ERODIUM PELARGONIFLORUM.

This is one of the heartiest and most robust of its race; a woody, sound perennial that has just endured 20° of frost without flinching, and it seems equally indifferent to wet. The pale green leaves, about two inches long, are roughly heart-shaped, prettily lobed and covered with a fine down. In early spring, often in March, the first flowers appear. They are about an inch across and white, faintly flushed with pink, and deeply spotted with wine-red on the upper petals. Erodium pelargoniflorum continues to bloom practically throughout the season, and the plants generally oblige by sowing enough seeds to provide a sufficient reserve of self-sown seedlings. I grow this useful species in rather poor, light soil, in a sunny position, but it is said to survive the winter even in the clay of a London garden.

E. hymenodes is not unlike the above in general appearance, but this I think, is a true biennial.

SPIRAEA JAPONICA ALBA.

This form of the well-known Spiraea japonica is a useful shrub for late summer effect. Grouped in conjunction with the well-known carmine variety Anthony Waterer, it may be extremely attractive, but the large, terminal corymbs of blossom are produced so freely and are such a good white in colour, that the shrub has sufficient merit of its own for individual treatment. S. japonica alba, sometimes known as S. callosa alba, is not such a robust grower as the type, nor does it attain the size of var. Anthony Waterer. With me it averages rather less than three feet in height. The habit is neat and compact, it does not spread too rapidly, and it is a shrub which will do well in comparatively sunless positions.

This variety is so distinct that it has been classed as a separate species by some authorities. *A. T. J.*

DISPORUM OREGANUM.

Considerable confusion seems to exist with regard to this Liliaceous plant. At one time it was known as Prosartis oregana, and several authorities have included it in the genus Uvularia.

It is a dwarf, rather attractive, herbaceous plant, suitable for planting in woodland in conjunction with Fritillarias and Uvularias. Its branching, wiry stems, about eighteen inches in height, are clothed with ovate or oblong-lanceolate, acutely-pointed leaves. The campanulate flowers are produced either singly or in drooping racemes of three or four, on slender pedicels arising from the axils of the leaves. They are dull purplish-brown in colour.

Disporum oreganum (Fig. 45, p. 77) grows freely and increases rapidly by rhizomatous growths when once established.

PLANTS NEW OR NOTEWORTHY.

ARISTOLOCHIA LINDNERI.

A NEW BOLIVIAN SPECIES.

SAN José de Chiquitos, in Eastern Bolivia, is certainly a forlorn place; nevertheless, European and American scientists have been there repeatedly. The expedition of Dr. Krieg, Munich, and Dr. Lindner, Stuttgart, also visited this place in September, 1926. The Plaza of the town, a large green in front of the old Missionary building, was scantily covered with low, uninviting vegetation, and both being zoologists, these scientists did not pay much attention to it. In the morning, however, Dr. Lindner was struck by a disagreeable smell coming from the ground, and on looking around he discovered among the low herbs of the Plaza rather large, brown flowers of a peculiar shape, from which the disagreeable smell originated. They proved to be a species of Aristolochia, and were visited by quantities of small flies.

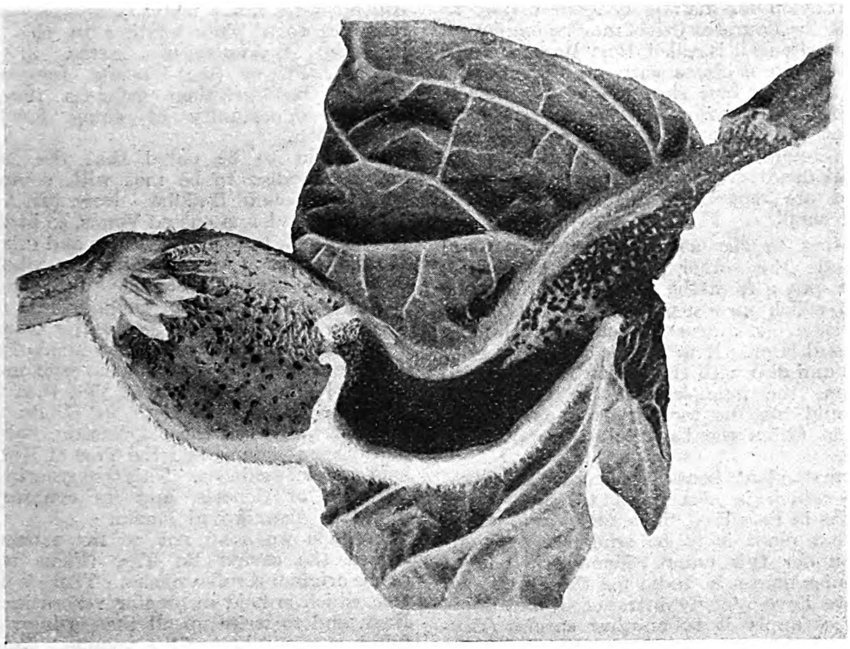


FIG 48.—ARISTOLOCHIA LINDNERI; SECTION OF FLOWER.

Dr. Lindner collected some herbarium specimens and alcohol material, made drawings and took photographs of this curious plant, and also brought back a number of fresh seeds. When studying Dr. Lindner's collection I found that there was no such Aristolochia known, and that it was evidently new, but to make sure, before naming it I sent photographs of the plant to the herbaria at Dahlem, Kew, New York and Washington, but in no place was a similar plant known.

It is a most peculiar plant, creeping on the soil (Fig. 47) with pubescent, not twining, slender stems about a foot or more long, and small, cordate-ovate leaves, about three-quarters-of-an-inch long, on short petioles, and with a densely and adpressed pubescence at the back. The flowers are about five inches long; the peduncles being short, scarcely half-an-inch long, with a roundish, leaf-like, small bract under the ovary. The lower part of the flower-tube is obovate, greenish, with some brown spots; the upper part of the tube is suddenly bent, narrower and darker brown. This difference in colour is very remarkable and can well be seen from outside. The lower lip consists of two large, roundish, ciliate, chocolate-brown lobes with a few paler markings, while the upper lip has a linear-lanceolate acuminate outline. Its colour is somewhat paler brown. On the margins and along the upper side it carries small cartilagineous teeth arranged in lines between the main nerves. The back of the flowers is densely pubescent.

The pollenation of this new species is very peculiar, and deserves to be especially described. Dr. E. Lindner studied it carefully on the spot. It appears from his observation that the flies are usually attracted by the odour, and on entering the flowers they have first to pass the upper part of the tube, which is entirely dark. On proceeding, they find at the end of this dark tunnel a solid wall, which, on its upper part, has only a small, roundish opening, somewhat conical in longitudinal section (Fig. 48), *i.e.*, it is narrower at the inner side. By means of this perforated wall, all larger flies are prevented from entering the lower part of the tube containing the sexual organs of the flower. A small, brighter spot on the roof of the tube, just above little hole, seems to facilitate entrance. Seen from this hole, the lower part of the tube must seem to be quite clear and bright, as only a few brown dots obscure it, and a circular, colourless spot on the bottom around the column must seem to lead again into the open. The flies on entering, however, find themselves deceived, and in crawling around the clear spot in the base of the flower tube, must pollenate the stigma if they brought pollen with them, and afterwards, when the anthers of the flower open, they are bound to load themselves with new pollen. But for some time there is no escape. After the shedding of the pollen, however, a great change in the colouring of the flower takes place. The dark, upper part of the tube looses its colour and becomes brighter, the entrance hole becomes wider, while the lower part of the tube gradually becomes dark in colour, and, naturally, the flies follow the light and escape their prison. All this happens within a few hours of the morning. After that the flowers soon wither and become disformed.

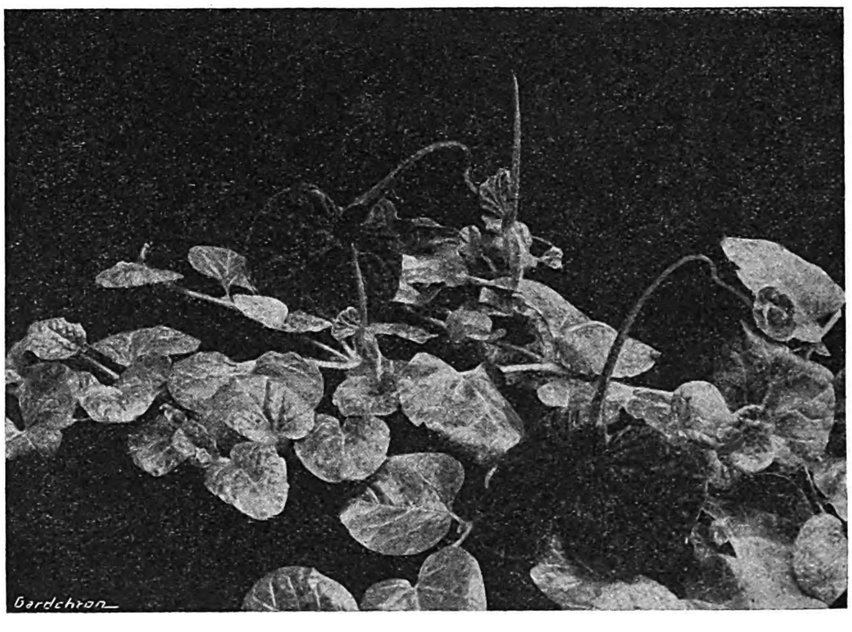


FIG. 49.—ARISTOLOCHIA LINDNERI; CULTIVATED PLANT.

Dr. Lindner, as a specialist on flies, examined many flowers and the flies contained therein. They belonged to ten different species, three of them being new; also. a new, small beetle was found. The withered flowers contained no insects in the afternoon, and as no fresh flowers appear until the following morning, the flies have to carry the pollen on their bodies until the next day, unless the flowers are self-fertile. It seems that plenty of seeds are produced on the spot.

From seeds brought back by Dr. Lindner several plants were raised. The most successful were those given to the Botanic Garden in Nymphenburg, Munich. These were grown on the ground of the Pilocereus House. They soon covered a large space and flowered very abundantly for several weeks. The plants (Fig. 49), however, were much more vigorous and larger in all their parts than the native specimens. The flowers, at least those that Dr. Lindner examined last September, contained no insects. Seeds, however, were produced as a result of artificial pollenation, and cuttings were successfully rooted. This new Aristolochia will therefore very soon be distributed among botanical gardens. I have grown, and still grow, a few plants in a pot on the window-sill of my office, which are less vigorous, but in full health, and resemble the native specimens very closely.

So far, we do not know how the plants pass the dry period in their native place—whether they have rhizomes or tubers. The plants on my office window do not seem to prepare for rest, except that they stop growing. The new plant was named by me in honour of its discoverer, Dr. Erwin Lindner, Entomologist of the Museum for Natural History, Stuttgart. *Alwin Berger.*

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IDEAL GARDENS AND PLANT LORE.

The Paradise of Indra.

GREAT and puissant was Indra, erstwhile chief of the gods. He claims a special place in this connection because he was not only heaven's great husbandman, rendering the Celestial regions fertile, but also the benefactor of the terrestrial realms, enriching the earth with the dew and the rain. What Jupiter was to the Romans, Zeus to the Greeks, Thor to the German and Scandinavian races, and Lui Kung to the Chinese, such was Indra to the early Hindûs. Indra's garden was a spot of unequalled beauty. Here, as we learn from the old-time poets and romancers, an umbrageous wood or grove was to be found on Mount Meru or Sumeru, where the gods could take their ease and quaff from golden goblets the famous Soma or the life-giving Ambrosia. Cooling fountains and rivulets were found here, together with an enchanting flower garden, luminous blooms, fruits which rendered immortal those who ate them, and birds of the most brilliant plumage, whose songs delighted the gods themselves.

In our attempts to reproduce the Garden of Indra we shall first introduce the five plants for which it was specially famous. Next will follow a brief notice of some of the trees and flowers which bear the name of the god or are devoted to his memory. Finally, we shall want to plant typical specimens of those herbs of immortality from which are to be obtained the fruits, juices and ambrosial draughts which render those who partake thereof immune from death. The first of the trees to be planted is the Parijata, "the flower of which preserves its perfume all the year round, combines in its petals every odour and every flavour, presents to each his favourite colour and most esteemed perfume, and procures happiness for those who ask it. This wondrous flower will also serve as a torch by night, and will emit the most enchanting sounds, producing the sweetest and most varied melody. It assuages hunger and thirst, cures diseases, and remedies the ravages of old age."

Can such a tree be found for our mundane garden? Those who are learned in these matters tell us that the Parijata is the Coral Tree (Erythrina indica), and that it has been cultivated in this country for upwards of a century, having been introduced into the Cambridge Botanical Garden in 1814. The Indian Coral Tree—as distinguished from other species—has light, greenish bark, black prickles, smooth cordate leaves with long petioles, large flowers in bright scarlet racemes, and pods several inches long. It is one of those trees whose flowers appear before the leaves, the plant being bare for several months in the year. The leaves fall in the month of June. It is used in Ceylon for making hedgerows, just as with us Holly, Laurel or Privet may be employed. Kingsley tells us it is called Bois Immortelle in Trinidad, where it blazes with vermilion flowers against the deep blue sky. Some say that it is these brilliant blossoms that have secured for the plant its name of Coral Tree. Others, however, refer the name to another species (E. Corallodendron), whose seeds are hard and red, and are made into necklaces so as to resemble coral.

According to the ancient legend the Coral Tree and the other plants in Indra's Paradise sprang from the water, and the name Parijata, which means water-born, crystallises the tradition. It rains ambrosia, of which more will be said later. It is further connected with Krishna and also with the Saint Graal, but to follow out the plant-lore of the Coral Tree fully would take us too far from our object. In Cochin China the bark takes the place of Quinine.

The next plant bears the name Mandâra, a name which is also given to one of the mountains in Paradise. It is not easy to determine what plant is to be admitted into our garden under this name. Mandar is one of the popular names in India for the Coral Tree which we have already introduced, but some authorities apply it to another species (Erythrina fulgens). We prefer, however, to affix the name to the Swallow-wort (Asclepias gigantea), also known as Milkweed. The blossoms are very remarkable, while the plants are characterised by their acrid, emetic, stimulating and purgative properties—just the kind of plant to be placed by popular fancy in the gardens of the gods. Most of the species have a milky juice which, when dry, resembles rubber, while several are remarkable for their fibrous properties. The great majority are distinguished by their climbing or twining habit, the seed vessels, too, are noteworthy for being in pairs, which, on bursting, reveal a quantity of Thistle-like down attached to the seeds, which causes them to float about like those of Dandelions, Thistles, or Willow-herb. This down from some species is so long that it has been used for making dress material, but the fibres are the more valuable product. It should be observed that the Swallow-worts are poisonous, the Mandâra of Indra's Garden being one of the worst in this respect, it being affirmed that even oxen have been killed by eating it. But then the same may be said of our English Yew.

The next of the five special plants is that known in the Sanskrit lists as Santâna or Samtâna. The name seems to have reference to the spreading and shade-giving properties of the tree, but though it is mentioned by the poets, and others, no one seems to have determined exactly what terrestrial plant is to be regarded as its counterpart. In this case one might suggest that the Banyan, which is a sacred tree among the Hindûs, be used as the representative. Of the fourth tree, Hariçandana, equally little is known.

The fifth tree is named Kapilavriksha in Sanskrit, but, while it is equally mythological with the last, attempts have been made to identify it. The ancients inform us that it was a tree which satisfied every wish; it seems to have been a Fig tree. It is, we believe, thought by some to be a near relative of the Oleander, and belonging to the same Order as the Milkweed. In India the name Inderjoa is applied to this plant (Wrightia), and seems to be related to Indra. Thus Kala Inderjoa is a popular term for one species (W. tomentosa), while Goda Inderjoa is the epithet applied to the seeds of another species (W. tinctoria), a plant which supplies a blue dye like Indigo. Yet another species (W. antidysenterica ?) is much esteemed, especially in Malabar as a febrifuge and tonic. It has a special claim for consideration here, because the seeds are named after the god, Indrayava or Indra's Barley. We shall, however, meet with this plant again when we come to study those which bear Indra's name.

The word kalpa, still in popular use in India, as a plant name, is applied in Sanskrit literature to several different flowers and trees, occurring in such compounds as kalpadruma, kalpalatika, a synonym for kalpavriksha, and kalpaka. Among notes made many years ago there is reference to a plate relating to this subject in the *Archaeological Survey of India*, Vol. X, Pl. xv (see *Western Antiquary, II*, p. 9); but to these volumes the writer has no opportunity of going for further information.

It ought to be noted that the foregoing names are also to be met with compounded with the name of Buddha. Now, just as in the West the Madonna ousted Venus, so in the East Buddha took the place of Indra and other gods. It follows that if we can determine what plant or plants are designated by the terms Bodhitaru, Bodhidruma, Bodhivriksha and the like, we shall have a clue to the plant which was sacred to Indra and grew in his Paradise. When we come to examine the vast masses of material relating thereto we find that there is here the exact equivalent in Hindu folklore of what we find in the old Semitic, Babylonian and other religions, and the Tree of Knowledge is in especial evidence. This tree grew in the lost Paradise of Genesis, and its counterpart is found in Assyria and Persia.

Perhaps we shall not go far astray if we regard the sacred Bo Tree (Ficus religiosa) as the original Kapilavriksha. There is no other tree which is held in greater veneration in the East, and to write up all that is known of its folk-lore would be to fill a volume. It is gratifying to find my independent conclusion confirmed by so great an authority as Professor de Gubernatis. He remarks that:—

> "L'indien *devataru*, l'arbre des dieux, l'arbre cosmogonique, l'arbre du paradis d'Indra, la *Ficus religiosa*, est le plus fameux entre les arbres qui portent le uom de la divinité."
>
> *Myth. des Plantes*, *i*, 114.

In a footnote he adds that while the name "*devataru*" is applied indiscriminately to all the five trees found in Indra's Paradise, Mandâra, Parijata, Kalpavriksha, Santâna and Hariçandana, it is most frequently applied to the Ficus religiosa or Peepul Tree. Many other plants, however, share the honour, and as some of these, alike in legend and in present day use, are linked with the name of Indra, we must consider them in our next notes. In the meantime, our Garden of Indra will at least contain the Coral Tree, the Swallow-wort or Milkweed, the Banyan, the Oleander or Nerium, and the Pippala or Peepul. He who is familiar with the plant-lore of these will find infinite delight in their genial shade. *Hilderic Friend.*

(*To be continued.*)

NOTES FROM WISLEY.

In view of the irreparable damage inflicted upon so many gardens this winter by snow, wind, frost and flood, Wisley may congratulate itself on having escaped fairly lightly. The bulk of the damage resulted from the snow. This broke large branches off many Rhododendrons and large Heaths, but damage in the new Heath garden has been almost negligible. One of the large Conifers in the group situated near the foot of the rock garden was badly broken and the pleasing outline of this group is somewhat impaired. The snow could not quite get the better of the old Cryptomeria japonica var. elegans nearby, which has suffered in many previous storms, but a fine old specimen of Oxydendron arboreum which overhung the long ponds is a total wreck. Another tree which has been completely spoiled is one of Pinus insignis which grew against the engine house. Among the worst damaged of the shrubs were specimen plants of Elaeagnus angustifolia, Drimys Winteri and Azara microphylla.

As a result of the great gale, Wisley was unfortunate in losing the only large Ash tree on the estate. Some Austrian Pines also were loosened by the wind, and a large Elm will have to be taken down.

It is not possible to estimate at present the exact toll taken by the severe frost in December last. Not a few of the tender subjects appear to have been severely injured, and it is noticeable that the leaves of nearly all the Berberis, Cotoneasters and Pyracanthas have been badly disfigured. One is grateful, however, that the opening of early flowers, such as Hellebores and the fragrant Japanese Witch Hazel, has not been affected.

Fortunately, floods have not affected these gardens to any appreciable extent, although most of the adjoining countryside has been submerged, and the roads rendered impassable. The rainfall recorded at Wisley last year was ten inches above normal.

In the alpine house, Saxifrages, such as the early-blooming S. burseriana var. tridentina and S. Kelleri, with pink flowers and red pedicels, are in flower, in company with Morisia hypogaea, with its cheerful blooms of bright yellow. Colour is also provided by the bright red foliage of Shortia galacifolia, and of Lewisia Cotyledon, the leaves of which are bright purple on the under side. The least attractive plant at the moment in this house is probably Sedum primuloides which, to anyone who was unfamiliar with it, would probably appear to be dead. It is, however, in perfectly good health and green shoots appear from the seemingly dead foliage in late spring.

In the alpine frames, the lilac-flowered Crocus laevigatus is in bloom, together with C. Tournefortii.

In the field garden, Erica carnea and many of its varieties, such as E. c. alba and E. c. praecox rubra, are starting to bloom, while by the side of the field-garden pond the silver catkins of Salix prunosa are now visible. The only bright spots of colour around the pond banks at present are the stems of Salix coccinea, Berberis yunnanensis, B. Jamesiana and, perhaps, most conspicuous of all, Cornus alba var. sanguinea, with bright red shoots.

In the laboratory, a bronze plaque has just been erected by friends of the late Mr. James Ramsbottom (for several years Assistant Editor of *The Gardeners' Chronicle*) in grateful recognition of the research work which he carried out in this building in eelworm disease of Daffodils, and of the successful control measures which he devised. *J. E. Grant White.*

GARDEN NOTES FROM SOUTH-WEST SCOTLAND.

The close attention which both florists and amateurs are now devoting with such excellent effect to the genus Iris moves me to speak a word in favour of our native Gladdon—Iris foetidissima—which deserves higher esteem than it seems to receive, judging from its infrequent appearance in cultivation. It does not, indeed, demand what can be termed cultivation, inasmuch as it may be thrust unto the ground in any odd corner of the garden or open woodland where, being distasteful to rabbits, it will flourish and increase uncared for.

Perhaps Linnaeus, the famous botanist and naturalist, must be held partly responsible for our neglect of the merits of this plant through giving it the specific name foetidissima—" most stinking." After all, the peculiar odour is not perceptible until the leaves are bruised, and even then is no worse than that of cold roast beef!

The flowers of the Gladdon, although delicately tinted and pencilled, are too small to bear comparison with those of many other species; but it stands unique in the genus because it produces brilliantly-coloured fruits. Following the flowers come fat, glaucous-green pods, three inches or four inches long, which yawn wide in October to disclose rows of shining, orange seeds as big as those of Peas. If the stems are cut and brought into the house, these remain fresh throughout winter and are most decorative when arranged in a vase with evergreens.

Some strains of this plant produce more richly coloured fruits than others. A few years ago I received some roots from Aberdeenshire which gave seeds " larger and of a deeper orange " than the plants which have grown here for more than a century.

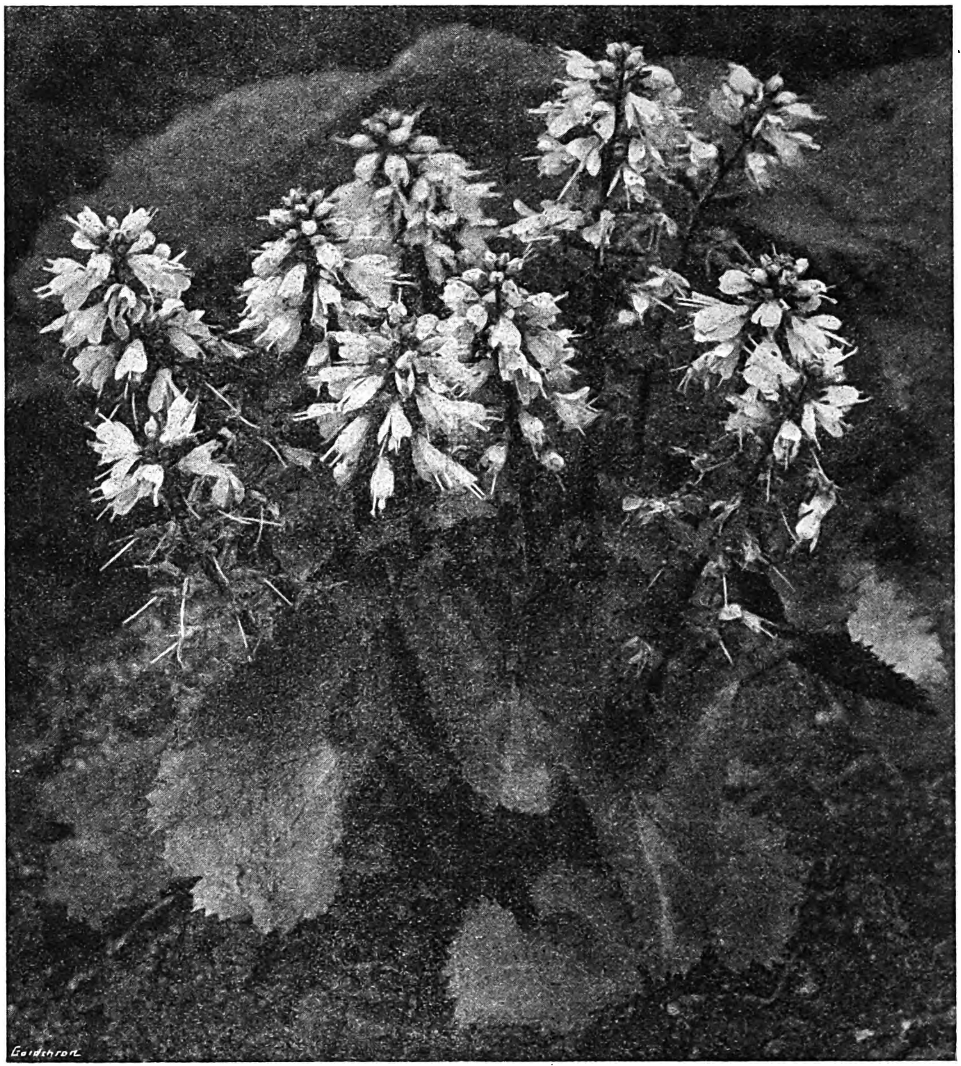

FIG. 50.—SYNTHYRIS RENIFORMIS.

(see p. 80).

Although truly indigenous in southern and midland England, in Scotland and Ireland the Gladdon only occurs here and there as a naturalised plant.

Leaving Rhododendrons out of the question, if a poll were taken of gardeners and amateurs to pronounce which were the most generally desirable shrubs recently introduced from China, perhaps a majority of votes would be given for Hamamelis mollis and Osmanthus Delavayi. It is true that the former was introduced by Maries nearly fifty years ago, but it had to wait half that time for recognition and distribution. It is also true that, flowering as it does from Christmastide onward, the Witch Hazel has few competitors in display, and that bushes ten and twelve feet high, thickly-set with golden bloom, gain by contrast with the dormant vegetation around them; but the absolute hardiness of the species, its unfailing profusion of flower and its delicate fragrance would entitle it to distinction at any time of year.

Hamamelis mollis is usually propagated by grafting on H. virginiana, with the result that the plants are apt to look like branches stuck in the ground. It would be interesting to learn whether it has been found practicable to increase the stock from seeds, and whether seeds have been produced in this country.

Osmanthus Delavayi, an attractive evergreen at all seasons, defers its finery until March, and, like Hamamelis mollis, never fails to wreath its slender branchlets with clusters of fragrant white flowers, no matter what may be the character of the season. Mr. Bean has recorded how, of the first batch of seeds received by M. Maurice de Vilmorin, from the Abbé Delavay, in 1890, only one germinated. If no more have been received since then, a fresh supply is much to be desired, because the true form and symmetry of tree or shrub may seldom be developed from cuttings or grafts.

It is a pity that Adonis amurensis cannot vie in brilliancy with its congener A. vernalis. Flowering simultaneously with the Winter Aconite in January, its blossoms show but a dirty yellow beside the clear hue of that cheerful little plant.

As a native of Tasmania, Billardiera longiflora may have but a doubtful reputation for hardiness; but the hard weather in December did not deface its shining purple berries which still hang thickly among the narrow, evergreen leaves. *Herbert Maxwell, Monreith.*

BURMESE PRIMULAS, 1926.

THE following list of Primulas collected in Burma and Tibet in 1926 may prove useful to growers. I am indebted to Professor Wright Smith, who went over the collection, for permission to publish the names; the comments are drawn from my field notes and diaries.

K.W. 6,820. — PRIMULA AGLENIANA, § NIVALIS.— This is the species referred to as the Tea-Rose Primula (P. thearosa), and later as P. muliensis, which received the name of P. Coryana also. Had I known—which I did not—that these last two were synonymous, I should have known that the Tea-Rose Primula, whatever it was, was not P. muliensis. I have found P. muliensis (then P. Coryana) myself, at Muli, and apart from differences in the flower and leaf. it has a long, narrow, slightly curved, sausage-shaped capsule, opening at the extreme tip, very cleanly, as though the apex had been sliced off with a razor, though the edge remaining then develops an even row of teeth. P. Agleniana has a spherical, crumbling sort of capsule, widely gaping, like P. falcifolia.

P. ANGLENIANA (type) has canary-yellow flowers and coarsely serrate leaves; the Tea-Rose Primula always has bright, rose-pink flowers and less sharply-cut leaves, so it is a distinct variety, and personally I think it the most wonderful—oh no! that was P. Florindae. It is a curious fact that though after leaving Fort Hertz I crossed several passes of 6,000 feet or thereabouts, I saw no sign of any Primula anywhere until I met with the Tea-Rose Primula at 9,000 feet on June 2, in the Seinghku valley. It was, extremely local, but fairly abundant from 9,000 to 10,000 feet in the two gullies where it occurred. It asked for shelter from sun (if any), abundant moisture from May till October, a great depth of coarse, stony soil, and a half-time job—no work between October and May. In England it will probably join the unemployed, and go on the dole, and stay in the dumps. A few seeds have germinated out of curiosity.

K.W. 6,821.—OMPHALOGRAMMA SOULIEI.— A lovely thing, not in cultivation. Strictly speaking, it is no longer a Primula, but that is merely its luck for the moment. History has a way of repeating itself *ad nauseam*. This is the only Omphalogramma known to me which grows in bulky clumps. Sometimes as many as a dozen blooms seem to spring out of the ground at the same point, and as it flowers when about three inches high, the effect is great; it is vastly common all up the Seinghku valley, from 9,000 to 10,000 feet, flowering in June. The seeds germinated so readily that it looks as though it might be that desirable prize, an "easy" Omphalogramma.

K.W. 6,822. PRIMULA EUCYCLIA, § GERANIOIDES.—A pretty, dwarf species, highly unlike the Chinese P. septemloba, or the Tibetan P. latisecta, but not so unlike the Sikkim P. vaginata itself. It is not a high alpine, as has been alleged, but is found under rocks and trees at 10,000 feet, or a little higher; nor has it pink flowers—they are quite definitely violet. Seeds have germinated, though not freely enough to fill one with confidence as to the future. Deep shade, and a perpetual shower bath are asked for and may be supplied; what cannot be had for the asking is six month's cold storage.

K.W. 6,830. PRIMULA BLANDULA.—*See* K.W. 6,911.

K.W. 6,841. PRIMULA EUOSMA, § PETIOLARIS.—A small, pale-blue edition of the Sikkim P. petiolaris, or perhaps the Chinese (and Burmese) P. sonchifolia, and about as easy to do. It flowers on banks where the snow is scarcely melted; common.

K.W. 6,842. PRIMULA SERRATIFOLIA, § CANDELABRA.— Generally speaking, P. serratifolia and the rather similar P. melanodonta kept each to itself, never mixing; the latter was by far the commoner; indeed, it was the most abundant Primula in the Seinghku valley, colouring whole slopes. P. serratifolia kept to a much higher average level, scarcely being found below 13,000 feet.

K.W. 6,875. PRIMULA PRENANTHA, § CANDELABRA.—A small species with the 'Sikkimensis' type of flower and inflorescence, and the 'Candelabra' type of capsule and seed, previously known from Sikkim. Not much of a garden plant, though it is possible that the high alpine forms from which the seeds were secured, are more showy than the dried specimens, that came from lower down.

K.W. 6,897. PRIMULA CALTHIFOLIA § PETIOLARIS ? NIVALIS ?—A very rare yellow-flowered species, assigned, in the absence of fruiting specimens, by Professor Wright Smith, to section 'Petiolaris', and by me (on the strength of having seen the fruit) to section Nivalis.' Only about eight plants were seen, one in bloom, on June 10, on the steep earth bank of a snow-choked gulley, at 11,000 feet altitude, nor was the plant ever met with again. A few seeds were collected on October 20.

K.W. 6,899. PRIMULA EUOSMA. (*See* No. 6,841.)

K.W. 6,901. PRIMULA MELANODONTA, § CANDELABRA.—A small species, somewhat like P. serratifolia, but with the contrasted yellows concentrically instead of radially arranged. This should prove at least as easy as P. serratifolia, and is certainly no whit inferior to it.

K.W. 6,902. PRIMULA SIKKIMENSIS, § SIKKIMENSIS.—Not obviously different from the ordinary form, except that the flowers are often. milk-white. The seeds have germinated readily.

K.W. 6,904. PRIMULA WARDII, § FARINOSA. —Not very abundant, and no seeds were collected

K.W. 6,910. PRIMULA GENESTIERIANA, § AURICULATA.—A minute alpine, with a tight ball of pin's-head flowers on top of a stalk; the colour varies—pink, purple, violet. I collected this in Tibet in 1924, and it then received the name of P. kongboensis, which, however, is now a synonym, identity with P. Genestieriana having been established. Fairly common between 12,000 and 14,000 feet on turf slopes; not a garden plant, although the highest forms are the best.

K.W. 6,911. PRIMULA BLANDULA, § AURICULATA.—A new species allied to the Kansu P. stenocalyx. Rather bigger than the last, and quite a promising rock plant, if it will grow, which is unlikely. It was significant finding two species of the more central Asian section 'Auriculata' in the Seinghku valley; it proved that although this area was actually within the Indo-Himalayan region, it was right up against the Sino-Himalayan region, which had sent a few scouts over to prospect.

K.W. 6,928. PRIMULA CHAMAETHAUMA, § PETIOLARIS.—The Blue Primrose Primula. A magnificent new species belonging to a section which has met with little success in England; but the fact that this is an alpine may be to its advantage. Very abundant on steep alpine turf slopes at 13,000 to 14,000 feet.

K.W. 6,929. PRIMULA BRYOPHILA, § NIVALIS. —A charming, light, purple-flowered alpine from turfy cliff faces. It was sent home by Farrer in 1919, but nothing more has been heard of it.

K.W. 6,933. PRIMULA VERNICOSA, § PETIOLARIS.—Collected many years ago in the Mekong-Salween divide, and in 1924, in Tibet; a dud.

K.W. 6,940. PRIMULA SILAENSIS, § AMETHYSTINA.—Claret Cup. A minute jewel of the high alps; first collected on the Si La, a pass over the Mekong-Salween divide. Locally abundant up the Seinghku, but not likely to do well at home.

K.W. 6,957. PRIMULA SP. § MUSCARIOIDES. —Fruit only, probably P. apoclita.

K.W. 6,975. PRIMULA APOCLITA, § MUSCARIOIDES.—A dusky-flowered species of alpine meadows and grassy slopes.

K.W. 6,981. PRIMULA CYANANTHA, § MUSCARIOIDES.—A pretty, powder-blue species of bush-clad cliffs and alps; not nearly so abundant as the last.

K.W. 6,982. PRIMULA PRENANTHA. (*See* No. 6,875).

K.W. 6,986. PRIMULA MUSCOIDES.—A minute alpine rock plant, first found in Sikkim. Of no garden merit.

K.W. 6,987. PRIMULA BELLA, § BELLA.— A good form of a species well-known in the anhydrous state. The only garden in which I have seen the living plant is Logan.

K.W. 7,002. PRIMULA SILAENSIS. (*See* No. 6,940).

K.W. 7,004. OMPHALOGRAMMA MINUS.—A poor caricature of O. Souliei.

K.W. 7,003. PRIMULA GENESTIERIANA. (*See* No. 6,910).

K.W. 7,009. PRIMULA WATTII, § SOLDANELLOIDES.—Fruit only. (*See* No. 7,017).

K.W. 7,015. PRIMULA CAPITATA. — Fruit only. (*See* No. 7,175).

K.W. 7,016. PRIMULA BLANDULA. (*See* No. 6,911).

K.W. 7017. PRIMULA WATTII, § SOLDANELLOIDES.—A beautiful species, hitherto known only from alpine Sikkim. The rich violet, tubular flowers are borne in a short blunt cone at the top of the stem. I also found two with white flowers, though these set no seeds. Rare and local, on alpine slopes amongst flowers and long grass. Almost certainly difficult— the very downy leaves indicate the danger.

K.W. 7,018. PRIMULA RHODOCHROA.—First collected in Tibet in 1924. A small alpine of only botanical interest.

K.W. 7,019. PRIMULA SERRATIFOLIA. (*See* No. 6,842.)

K.W. 7,020. PRIMULA FEA, § AMETHYSTINA. —This is 'Blue Microbe,' now called the 'Fairy Primula.' It is even smaller than P. silaensis, and perhaps even more beautiful, the combination of lavender, darkening to crimson at the base of the bell, being quite lovely. Fairly common on one high cliff only, and practically the highest flowering plant found, so there is small chance of ever seeing it in bloom, unless one goes so far as Tibet for the purpose.

K.W. 7,021. PRIMULA BRYOPHILA. (*See* No. 6,929.)

K.W. 7,040. PRIMULA SIPHONANTHA, § SOLDANELLOIDES. (*See* No. 7,228.)

K.W. 7,041. PRIMULA SIKKIMENSIS, SIKKIMENSIS.—Perhaps a more robust form, with flowers of a deeper yellow than No. 6,902.

K.W. 7,042. PRIMULA MELANODONTA. (*See* No. 6,901).

K.W. 7,052. PRIMULA EUCHAITES, § MUSCARIOIDES.—A new species which departs little from the traditional Muscarioid. Probably rare, as only two plants were seen on the limestone cliff, and one of them was inaccessible. No seeds were collected.

K.W. 7,053. PRIMULA RHODOCHROA. (*See* No. 7,018).

K.W. 7,054. PRIMULA SIKKIMENSIS. (*See* No. 7,041.)

K.W. 7,055. PRIMULA BLANDULA. (*See* No. 6,911.) *F. K. Ward.*

(*To be continued*).

THE "BREAKING" OF TULIPS.

IN the *Florists' Exchange* of December 17, 1927, the following appeared:—

"Bulb Development Featured in Report of Bureau of Plant Industry:—The modification in Tulips known as 'breaking' has also been demonstrated to be an infectious mosaic. Some 'broken' Tulips are prized as novelties, but for the most part they are inferior and undesirable. Since a widespread insect carrier is here concerned, the report warns growers to take immediate steps to eliminate broken varieties from their collections."

In the issue of *Florists' Exchange* for January 14, 1928, the following strong letter appeared from Mr. G. W. Leak, and I think this should be seen by all interested in bulbs on this side.—*W. Cuthbertson*:—

"The 'Breaking' of Tulips.—English Expert Scouts Mosaic Theory as Advanced by Bureau of Plant Industry. — *Editor F. E. and H. T. W.*—The report of the Oregon Agricultural Experiment Station on the 'breaking' of Tulips as quoted by C. L. Linz on page 1343 of your December 17 issue must surely be a lot of bluff. Scientific investigation into the reason for the 'breaking' of Tulips has been carried on in Europe for some years, and the John Innes Institute in London is at present carrying out experiments under the Director, Sir Daniel

Hall, who has been a specialist in the breeding and cultivation of Tulips for over thirty years; but so far as one can tell it is still without any trace of a key to the solution of the cause of 'breaking.' I have been growing many acres of Tulips of all sections annually for over thirty years and have seen as much 'breaking' in stocks as probably any other living grower, but I am still without any definite idea of the reason for 'breaking.' If, as the Oregon Experiment Station says, it is an 'infectious mosaic,' and that a 'widespread insect carrier is concerned,' why is it that all 'breaks' of Tulips can be fixed in character with a few years' selection? That broken and unbroken stocks can be planted, side by side, with no fear whatever of infection? Also that though you may mix broken and unbroken stocks together and plant them together, the 'breaks' will remain 'breaks,' and the unbroken ones will remain so, not for one year only but for a number of years? I think the Oregon Station will have to try again! In one year 'breaking' may be very bad, then it is scarcely seen again for a number of years. Change of stock sometimes leads to 'breaking' for one year only, and the same stocks after the 'breaks' are taken out will then settle down and no more 'breaks' are seen probably for years. *G. D. Leak, R. H. Bath, Ltd., Wisbech, England.*

"It seems to us that the questions asked by Mr. Leak will call for 'some answering.' While the work reported upon by Mr. Linz was done at the Oregon Station, it was conducted primarily by the Bureau of Plant Industry, whose annual report was the source of Mr. Linz's review. We have not yet received that document, but we will endeavour to secure a copy and also to obtain comments from Bureau officials upon Mr. Leak's statements.—EDITOR.—F.C."

A REVISION OF VIOLAS.

(*Continued from page* 63.)

VIOLA PATRINII is an amalgam of no less than ten different species. So far from being confined to the northern expanses of Asia and Japan, the group belongs to Asia as a whole, and to Australasia and the Islands in between; while one species—V. macroceras—invades the Caucasus and comes so far west as Transylvania. Common botanical characteristics of the group are that the stipules are adnate to beyond their middle, the leaves are ovate-lanccolate, broader or narrower, narrowed abruptly or gradually into a distinct and winged petiole, and the plants have no runners. Taking them in alphabetical order, the species are as follows, it being here possible to indicate only a few outstanding features of each :—

V. betonicifolia, Sm.—Plant downy; leaves linear-oblong; flower-stems longer than the leaves; very short spur; petals white, the lateral bearded; from Australia (*e.g.*, near Sydney) and Tasmania. The variety nepalensis is widespread from Japan and China to Afghanistan, Ceylon and the Philippines.

V. inconspicua, Blume, has been grown in this country under the name of V. apetala, Roxburgh, but by reason of the absence or minuteness of petals, is not worth growing. Plant for the most part glabrous; leaves numerous, in rosettes, hastate; flower-stems long and slender; spur short, thick, pale; petals of the infrequent chasmogamic flowers violet, the lateral bearded; from Java to the Himalayas (*e.g.*, near Darjeeling) and through Burma into Southern China.

V. cashmiriana, W. Becker, almost entirely glabrous; leaves triangular-ovate; flower-stems barely exceeding the leaves; spur longer; petals deep violet, rather tubular, the lateral bearded; scented; from the Hindu Kush and Karakoram ranges, up to 13,000 feet.

V. Limprichtiana, W. Becker, plant entirely glabrous; leaves longly triangular, with shorter petioles than the foregoing; flowers shorter than the leaves; spur as in V. cashmiriana; petals white, the lateral bearded; from central China (Hupeh) and Korea.

V. macroceras, Bunge, has found its way to a few gardens, rarely in its Caucasian form (V. purpurea, Stev., a name belonging by right to an American Violet), and more frequently in its Translyvanian form (V. Jooi, Janka). As V. Jooi has puzzled several growers, both here and abroad, a longer description may be useful. Root short and thick; leaves longly petioled, roundish-ovate, cordate, flatly crenate; stipules membranous, whitish, adnate to beyond the middle; petioles winged, especially in the upper part; flowers barely taller than the leaves, fragrant, purple, rose, lilac or white, but never violet, the lateral bearded and the upper bent backwards; sepals ovate-oblong, membranous at margin; auricles short, truncate; spur curving upwards, half-a-centimetre long; seed capsule blotched with purple, large; seeds purple; blooms from April to June. The type from Siberia (Altai, etc.) and Tibet; the Caucasian form from subalpine woods, *e.g.*, near Tiflis; the Transylvanian form from limestone rocks, *e.g.*, near Kronstadt (now called Brasso).

V. mandshurica, W. Becker, seeds of which I obtained from Japan and distributed last year, is also known as V. chinensis, G. Don; but the name chinensis has been used so frequently in connection with Asiatic Violets that it has ceased to have any intelligible meaning. Plant hairy; leaves ovate-lanceolate, lingulate, the lower part of the winged petiole very broad, and the prominent midrib dark yellow; flowers above the leaves, larger than in any of the foregoing; spur pale and relatively long; petals deep violet, with darker lines, the lateral bearded; stipules dark (almost violet); from Manchuria, Korea (where common), North-east China and Japan (*e.g.*, near Tokio and Yokohama).

V. Patrinii, D.C., generally glabrous; leaves ovate-oblong, becoming in summer sagittate; spur short; flowers white or pale lilac, small; lateral petals bearded; root thick and black; plants have only two or three leaves and one or two blooms; from Siberia, Manchuria and Japan —absent in Korea—and there is a Chinese form with certain minor differences.

V. phalacrocarpa, Maximowicz, the whole plant hairy; plant, when in bloom, dwarf, not more than three inches, but in summer lengthens to eight inches; leaves ovate, flatly cordate, the summer ones becoming much larger; flowers taller than the leaves; spur long and slender, pale violet; petals deep reddish-violet, the lateral bearded; from dry slopes and light woods in Southern Manchuria, Korea and Japan (very common near Yokohama, and Sapporo, where the Imperial Botanic Garden is).

V. philippica, Cav., the whole plant pubescent; leaves lingulate, pale green, slightly violet underneath; petioles short; flowers taller than the leaves; spur slender, relatively very long; petals pale violet, the lateral bearded as seen under the microscope; the northern form (sub-sp. munda) from Mongolia, Manchuria, Korea, China (Pekin, Shanghai), Japan (Yokohama), Burma and India; the southern form (sub-sp. malesica) from Japan, China (Hongkong), Formosa, Java and the Philippines.

V. prionantha, Bunge, commended by Farrer without relating it to the Patrinii group, is glabrous or slightly pubescent; leaves lanceolate or ovate-oblong, very little cordate at the base; spur relatively very long; petals violet, rather short, the lateral not bearded; root white; auricles toothed; from the Amur region of Siberia southwards to central China.

Incomplete as the above descriptions are, they may be of service to those who have been puzzled by this most puzzling group of Violas. The collective group of V. Patrinii is one of vast geographical distribution—from Eastern Siberia to Tasmania, and from Eastern Europe to Japan. Covering so large a proportion of the earth, it is not surprising that its characters are so various. For further enlightenment, readers may be referred to Becker's very thorough, though not necessarily final, analysis in the *Botanischer Jahrbucher*, of 1917, on which the above notes are very largely based. *E. Enever Todd, Lt.-Col.*

(*To be continued*).

THE QUALIFICATIONS OF AN IDEAL PARK SUPERINTENDENT.

THIS address* was suggested to me by a question put to candidates at an examination arranged by the Royal Horticultural Society some twenty years ago. Pressure was being periodically brought to bear upon the London County Council to increase the wages of the lowest ranks of parks employees, and it was thought that some differentiation should be made between the skilled gardener growing the plants for a Chrysanthemum exhibition, for example, or planting an elaborate flower-bed, and the garden labourer who carried out the routine duties of mowing grass and sweeping paths.

It was decided to make this differentiation as the result of a theoretical examination, and as the then existing examinations of the Royal Horticultural Society were hardly suitable, involving as they did a knowledge of the cultivation of fruit and vegetables which are not required in a public parks service, the Council was asked to institute a special and appropriate examination for park employees. This was done, and those candidates who were successful were classed as gardeners and given slightly increased pay, the remainder remaining as labourers, without any increase. The method caused considerable heart-burning, and during later years has been considerably modified, more prominence being given to practical work, but I refer to this subject because one of the questions asked at one of the earliest of these examinations was in some such terms as the title of my paper. What are the qualifications of an ideal Superintendent? Whatever answer satisfied the examiners of that date would be inadequate at the present day, as the duties of Park Superintendents have increased out of all recognition in the last twenty years.

The increase has been brought about by the much greater use made of the public parks, especially since the war, due in a great measure to the general shortening of hours of labour and greater opportunities for leisure, and also to the modern development of outdoor sports. From quiet resting-places with undulating and wide-spreading lawns, embellished with flower-beds, plentifully supplied with shade-giving trees and borders of flowering shrubs, and containing sheets of water whose placid surface, fringed with aquatic vegetation, was only disturbed by a few water fowl, the parks have developed into scenes of bustle and activity. Grass areas must now be level and free from trees or other obstructions, in order to accommodate the thousands of all ages and sexes who spend their ample leisure hours in the open air, deriving health and vigour from the many opportunities afforded for outdoor recreation. Pleasure boats and motor-launches are used on certain lakes, others have been turned into excellent swimming baths, and the flowers are more and more concentrated into separate flower gardens or borders. Even the very sports have been speeded up to consort with the energy and rush so characteristic of modern days. The quiet, sedate game of croquet, beloved of curates and garden-party hostesses, has practically disappeared, and the popular lawn tennis of the present day is that played on hard-courts—quite a different game to the pat-ball of twenty years ago. These changes are naturally reflected in the lay-out of the modern parks, in which greater areas have to be set apart for games than was the case when the older parks were designed. In late years also there has been a change in the management of parks, and the modern tendency is to place them in separate departments, instead of being branches of Engineer's or Surveyor's Departments. Such park departments become more or less self-contained, carrying out their own works and improvements, with a consequent addition to the responsibilities of their head officials.

The late Mr. Whitton, formerly Superintendent of the Glasgow Parks, in a paper read before the Royal Horticultural Society in March, 1919, gave his idea of the ideal public park in these terms :—" An area large enough for provision to be made for most outdoor games such as football, cricket, hockey, tennis, croquet, golf and bowling; gymnasium, sandpits, etc., for the youngsters; a large lake where boating in summer and skating in winter might be enjoyed by the thousands of city dwellers who are penned up in the daytime in offices, warehouses or factories; ample space for perambulation, as well as broad, well-kept lawns, with fine trees and shrubs and flowers, to give that feeling of repose and refinement which to thousands is the most health-giving power city parks possess; plenty of suitable seats and shelters for the weak, the weary and aged, along with the many other adjuncts which go to make for the pleasure and comfort of humanity." He added that Glasgow had not then attained to that ideal, although considerable progress had been made towards that end. but these features, with others not mentioned, will be found in many modern London parks, and if we accept this description of the ideal park the ideal Superintendent will be the one who can manage it to the complete satisfaction of the public—his employers—and, let me add, himself.

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*A Lecture delivered by Mr. F. W. Parker, F.S.I., Second Officer, Parks Department, London County Council, on January 17, at a meeting of the Association of Parks and Botanic Gardens Superintendents.

Park Superintendents are, almost without exception, appointed either by promotion from an existing park organisation, or by transfer from private service, and it will be well at this stage to examine the differences between public and private service, so as to see whether recruits from the latter are likely to prove ideal Superintendents of public parks. I think it will be admitted on all hands that the work of a Park Superintendent is infinitely more arduous and requires greater qualifications than will be called for in private service. Why, then, should he give up his comparatively quiet calling for the cares of public service? In the first place, the pay is probably better, he has greater prospects of promotion and of improving his position, there is the likelihood of a pension on his retirement, and above all, security of tenure. After being once appointed on the permanent staff nothing but inefficiency, misconduct or a breakdown in health can dislodge him, and he is immune from the anxiety of losing his position when his employer dies, or the estate changes hands.

At first it would seem that there is little to choose between the work of a private and public garden, but take a matter which is common to both, such as horticulture, and it will be seen that a successful head gardener of a private establishment is not necessarily the ideal Park Superintendent, or *vice versa.* He may be, but if so, it is because he possesses other qualifications than those which have brought him success in private service. To begin with, the plants he has to raise and deal with are different. When quitting private for public work he leaves behind him his fruit and vegetables, for which he has doubtless received many certificates, nailed up with justifiable pride in his potting shed. Only in exceptionable circumstances will he again be called upon to grow Orchids or other stove plants. The Violets, Gardenias, or other flowers necessary for his employer's morning buttonhole are no longer required. The dinner tables which he has decorated with such taste throughout the year will now pass from his ken, nor will he have to furnish my lady's boudoir with Palms and Maidenhair Ferns. His employer may be exacting, but he will find a greater tyrant in the British public, who is not afraid to tell him to his face, "I'm a ratepayer, and I pays for the likes of you."

In private service he has only the tastes of his employer, or more likely the mistress, to consider. These may be eccentric; he may abominate Dahlias, and may agree that a Dahlia in a garden is as much a blot on the landscape as a petrol station in the country. Again, his employer may be of a strictly conservative nature, desiring the same old Pelargoniums and Calceolarias in his beds year after year, and frowning on any innovation his gardener may wish to introduce. Whatever the peculiarities, they will soon be known, and the gardener may act accordingly, even if sometimes it goes against the grain. But so soon as he steps into the limelight of public service, he will find all this altered. He must try to meet all tastes. He will have to produce his Dahlia borders, his bedding must be varied every year, he must keep up-to-date with all new introductions, and he must furnish herbaceous borders, alpine rockeries and perhaps beds of succulents. In all probability he will have to plant under less favourable conditions, as the parks that are most useful are in the centres of busy populations. The range of trees and shrubs that will thrive under town conditions is limited, and horticulture will be carried on amidst all the difficulties created by a smoky atmosphere and petrol fumes. All the year round the Park Superintendent carries out his duties under the eagle eye of an exacting public, and woe betide him if he has any failures. Spring, summer, autumn and winter he must keep his park in Apple-pie order, whereas in private life he would be content to have the gardens presentable at the holiday periods, when his employer visited his country seat. He cannot even arrange his work in a public park as he would like. There are continual interruptions. At times when he would like to be carrying out improvements, all hands have to be turned out to sweep up leaves, or to clear away the debris following in the track of a storm of wind, because everything must be neat and trim when H.M. the Public enters!

It is this factor of "the public" which makes for the chief differences between private and public service. It crops up in many ways. One of the features of modern life that has had the greatest influence upon the work of a Park Superintendent has been the development of the open spaces for games and recreations of all kinds. This has been brought about in various ways, and the great war which was responsible for so many changes has greatly fostered the taste for outdoor games. The boys who on one memorable occasion started an advance upon the enemy dribbling a football, and who were kept fit by manly sport, demand facilities for their favourite games. Owing to the better conditions secured by trade unions, the working classes have increased leisure. This fact, and the operations of the Daylight Saving Act, have resulted in an enormous increase in the users of public parks, and although these movements affect the older as well as the younger population, the chief addition to a Superintendent's work has been in the direction of games.

In the schools, the introduction of "organised games" as a subject to be taken as part of the school curriculum and during school hours has led to a demand for pitches for cricket and football for the boys, and tennis and netball for the girls. The schoolmasters, many of whom are well-known sportsmen, have entered whole-heartedly into the scheme, and have organised leagues and inter-school matches, and for nearly all these matches space has to be found in the public parks. The modern growth of professional football has also been a contributing factor in the development of games, for although all those who make up the heavy "gates" of a popular professional football centre cannot take part in the game, there are many of the rising generation who are anxious to emulate the feats of Andy Wilson and Charlie Buchan.

Thus it comes about in the London parks there are school matches in the dinner hour, Saturday mornings, and during the holidays, which require every vestige of open ground that can be provided. When these organised games were first introduced into school life, the education authorities stated that any odd bit of rough ground would do for the purpose, but as time went on the demands became insistent for better pitches and more dressing facilities, until at the present day the pitches for schoolboys are little inferior to those for adults, in fact, in many cases they use the same grounds and the same dressing accommodation, although they are relieved of any charges. So great is the strain put upon the grass areas for field games that they have had to be supplemented by dry playgrounds, which are a necessity where the demands for grounds are the greatest. The ideal dry playground has not yet been found. What is required is a space that can be used in wet and frosty weather, which is not dusty in summer, or too costly. The best type at present is made of a mixture of loam and ashes. During wet weather this affords an excellent surface, but it is liable to become loose and dusty during dry spells and is then unsatisfactory, both to the users and onlookers.

(*To be continued*).

GARDEN MANURES IN FEBRUARY.

So much has been written on the influence of manures in supplying potash, phosphates and nitrates to the soil, that there is sometimes a danger lest the consideration of the equally important element—calcium—should be left in the background. As the tendency in modern cultivation is to make more liberal use of chemical manures, and this is without doubt the surest road to maximum crops, it is obviously a factor worthy of special study.

It has already been noted that the complete action of some chemical manures, which are applied to the soil under various systems of manuring, can only take place when sufficient calcium is there as a base; it may be well to consider this question at the present time, for where liming is contemplated, the application of it in whatever form is easier to carry out now than at any later period, as considerable areas of ground are now vacant, and have been tilled in preparation for the next crops. Those who are not contemplating liming would be well advised to make sure that their soils are not deficient in lime before finally deciding not to do so; this is easy to ascertain by using the spirits of salts test.

For this purpose a representative sample of soil should be taken, and, if after dropping a few drops of spirit on to it free effervescence takes place, it may be considered that sufficient lime is present. Even at the risk of being accused of using platitudes, I again emphasise the necessity of lime in the soil, for the total results from future applications of manure may depend on this.

Having decided that liming is necessary, the question of when and how to apply it naturally arises. The best time is in periods of dry weather during the autumn, winter and early spring. There is no best form, as many may be applied with equal effectiveness, and local conditions may be a governing factor in the choice.

Burnt lime, which becomes a fine powder when slaked, ground lime-stone, and ground chalk, may be used with success, but it should be realised that coarsely-ground limestone is very slow in action, and even the finely-ground samples cannot be termed quick-acting. For spring application, where it is essential to get the benefit in the first year, it may be a good investment to use a chemically precipitated lime. In practice, the application of such small quantities as from six to eight hundredweights per acre of such lime is found to give valuable results, therefore the cost is not heavy.

The use of sewage is not so common in the garden as on the farm, but where new kitchen gardens are being prepared near sewage works, the comparatively cheap rate at which it is offered may be an inducement to the purchase of it. It is well to realise, however, that the direct nutritive value of such material is relatively low, although under certain conditions it may be quite a useful addition to soils. Under natural conditions it contains a very high percentage of water, which makes transport costly. These sludges contain about 1·2 per cent. of nitrogen, reckoned on its dry weight, and this is its chief nutritive value. The nitrogen is in an inactive form and becomes available at a slow rate. If lime is used, this percentage of nitrogen may be reduced by loss of ammonia, but the product may still be of equal value because of its lime content, and there is no doubt that on some soils the apparently good results following a dressing of sludge is due to the application of the lime in it. The sludge resulting from the activated process of purification is much richer in nitrogen, frequently containing so much as seven per cent., calculated on the dry weight, with the additional advantage that it is distinctly more active. Here again, the difficulty of removing the water is a real one, but a drier activated sludge forms a very valuable and quick-acting nitrogenous manure.

The useful application of chemical manures at this season is relatively limited, but a light dressing of sulphate of ammonia to spring Cabbages, or other green crops may be made with highly satisfactory results. In the season of active growth somewhat quicker results may be obtained from the use of nitrate of soda.

For general purposes, the grower has to consider closely the relative values of the manures he applies. This can only be done by finding the cost per unit, and it may be interesting to many readers to compare the values of these two popular manures, both of which are applied for their nitrogen content, on their unit value. Taking the chemical formula of sulphate of ammonia as $N_2H_8SO_4$, we may arrive at its unit value as follows:—$N = 14 \times 2 = 28$; $H = 1 \times 8 = 8$; $S = 32$; $O = 16 \times 4 = 64$; total molecular weight $= 132$; therefore $N = \frac{28}{132} \times 100 = 21{\cdot}2$ per cent.

Again, taking the chemical formula of nitrate of soda as $Na\,NO_3$, we have:—$Na = 23$; $N = 14$; $O = 16 \times 3 = 48$; total molecular weight $= 85$; therefore $N = \frac{14}{85} \times 100 = 16{\cdot}5$ per cent.

Roughly, this means that sulphate of ammonia at 21s. per cwt. is equal to nitrate of soda at 16s. 6d. per cwt. *W. Auton.*

FRUIT GARDEN.

NEW RASPBERRY PLANTATIONS.

THE ideal time for making new Raspberry plantations is so early as practicable in the autumn, but it is not always possible, in practice, to act up to ideals. With ordinary care, the operation may be carried out at any time during open weather, between autumn and March.

The Raspberry delights in a well-worked and rather strong, loamy soil, but good results may be obtained in any average garden soil. It is a moisture-loving plant, and difficulties sometimes arise on dry, gravelly soils if sufficient care is not taken in their preparation; such soils should receive liberal additions of organic manure to increase their water-holding capacity.

Propagation is generally effected by means of suckers, and these should be obtained from healthy stock, selecting only those with an abundance of fibrous roots. Care should be taken when planting that the basal buds are not buried too deeply, and that they are not bruised when treading the soil about the roots, for it is on these that the current year's canes and the future strength of the plants depend. Newly-planted canes should be cut down to within a few inches of the soil to induce strong growth from the basal buds, thus laying the foundation of a profitable plantation.

A mulch of half-decayed manure applied during the growing season, is beneficial; owing to the surface-rooting character of the plant, surface cultivation is difficult, and without a mulch much moisture is lost by evaporation.

There are many systems of training, and although the method of stretching wires from stout posts at either end of the row, and tying the canes to them, has much to recommend it, it is too expensive on a large scale for commercial purposes, and the system of planting in groups, and placing a stout stake at the centre to which the canes are loosely tied, is more commonly practised. Such strong-growing varieties as Superlative and Pyne's Royal need some support, but the shorter-caned varieties of the Baumforth Seedling type require very little.

The Raspberry is a fruit that is always in demand, and one seldom hears of a glutted market. It is in season during a fairly long period, which can be extended by growing the autumn-fruiting varieties. It might be more largely grown for jam-making, to help balance the deficiency of Strawberries. While it cannot compete with the Strawberry as a dessert fruit, it is equally good for culinary purposes and preserving, and if used direct from the plant it has considerable merit as a dessert fruit, some of the yellow varieties in particular being of exquisite flavour. *A. P. C.*

HOME CORRESPONDENCE.

Snowdrops at Burford.—Thanks to the kindness of Mr. E. A. Bowles and other good friends, I am now growing Snowdrops bearing the names set out below, and would be glad to obtain by purchase or exchange, any other forms that may exist:—Atkinsii (Painswick Churchyard), Allen's Seedling, byzantinus, byzantinus November, caucasicus, cilicicus, Elwesii, Elwesii Balkan form, flavescens, Fosteri, Galatea, Icariae, Imperatii Boyd's long, Imperatii, "Twin Flowers," Lady Beatrice Stanley, latifolius Allenii, latifolius azureus, latifolius Wisley form, latifolius Glasnevin form, Magnet, Melvillei (Dunrobin), Merlin, Montgomery, Mrs. Backhouse, No. 7, Murielae, neapolitanus, Neil Fraser, nivalis double yellow, nivalis Ewbank, nivalis (late flowering form), nivalis (no green spot), nivalis Sir Herbert Maxwell's variety, Olgae, plicatus Boyd, plicatus Burford variety, plicatus flore pleno, poculiformis, Sharlokii, Straffan, Valentine, viridapice, viridapice (white form), and Wareham. *William Lawrence, Burford, Dorking.*

Iron as a Tonic for Plants.—In the cultivation of the soil, there are several striking differences between English and French methods. With us, it is not usual to add iron to the soil because it is believed that all, save irreclaimable "bad" lands, contain a sufficiency of that metal for the plants' needs. In France, iron is added to the soil by means of artificial manures and patent plant foods. These fertilisers are given to plants when they are weakly, or when they are suffering from chlorosis. When a British gardener would apply nitrogenous manures, as the plants then lack chlorophyll which can only be manufactured by them when their leaves and stems possess a sufficiency of iron, it would appear that the French are justified in dosing anaemic plants with iron foods. The role which magnesium plays in plant life is acknowledged to be obscure, but I have often read in French horticultural works, and heard it stated by several French gardeners, that magnesium is necessary for the development of the reproductive organs of plants, and for the growth of the embryo. Others have told me that it helps in the fixation of nitrogen, and aids in disssolving the insoluble phosphates in the soil, but I have never been able to verify these statements. Iron in patent plant foods is given by French gardeners to Rose-trees suffering from rust. I know, from personal experience, that this benefits the trees. *Victoria Slade, Sampford Cottage, Blindley Heath, Lingfield.*

Sparrows and the Flowering Currant.—I have been much interested in the correspondence respecting blue tits and their destructiveness among fruit trees, although in these days I am not much concerned with this side of the business. Time was, however, when, if I had hold of the last tit I should cheerfully have twisted its neck. Lately, I have gone to the length of hanging out pieces of suet for them! What I am concerned with at the present time is the sparrow. Here, on the east side of the city, there is no such thing as a "flowering" Currant in the parks; or if one does survive it is a poor, miserable specimen, as the tiny buds are nipped off in such quantities as to almost cover the soil under the bushes. Gooseberries have to be protected by black cotton so soon as the leaves have fallen. In my garden is a clump of Crocuses—irresistible to the average sparrow—and yet this has not been touched, although unprotected. Can anyone explain this? *W. Parker, King Edward Park, Nottingham.*

A French Method for inducing the Quick Establishment of Trees and Shrubs.—During the past eight years, I have either been gardening in various parts of France or learning from French gardeners how to garden *a la francaise* and have observed that all good French horticulturists submit their trees and shrubs to an operation which I have never seen performed in Great Britain or Ireland. This consists of daubing the roots and branches of the tree to be transplanted with a mixture of clay and well-rotted manure, or a fertiliser, before it is transplanted. This is in order to diminish transpiration and to quicken the root-action of the tree. Many French gardeners roll their seeds in a like mixture before sowing them, in order to quicken germination. They call this to *praliner les arbres, ou les graines,* and are specially careful not to plant fruit trees without submitting them to this operation. All French gardening books and papers advise readers not to forget to do this. The word *pralines* comes from the name of a French lord, for whom his *chef* made a new sweetmeat by frying Almonds in sugar. This was first done in the town of Montagis, and the *pralines* of Montagis figure in every French sweetshop. *Victoria Slade, Sampford Cottage, Blindley Heath, Limpsfield.*

The Double Dark Sweet William.—I quite agree with Mr. Arnott (p. 25) that the origin of the double dark Sweet William has been lost in the mists of time. Dianthus barbatus fl. pl. and Murray's Double Dark Sweet William are new names to me. The plant was grown in the gardens of the Royal Horticultural Society in 1880, possibly for some time previously, under the name of D. barbatus magnificus, and is still offered under that name in, at least, two English catalogues. In a Scotch catalogue, one is named D. barbatus Cockscomb, which is double deep rich crimson, and nine inches high. This, I think, is the same thing. Plants that appeal by their own merits get many names by the granting of a new one when they happen to get rescued from obscurity, without a name. Between 1880 and the beginning of this century, this double Sweet William was grown in some quantity by the West Middlesex market gardeners, and brought to market in boxes, without name, but I recognised the old friend. This was evidence that the plant produces a considerable number of barren rosettes by which it may be propagated freely, even in the dry, southern climate. Plants raised from seeds and grown in open, sunny positions, are so liable to flower on all the rosettes, that many people regard the Sweet William as a biennial. In cool, northern districts, with an adequate rainfall, it is truly perennial, with plenty of rosettes. Of course, the above double variety produces no seeds, but has never become extinct, even in the southern counties. For similar reasons, the Mule Pink Napoleon III succeeds best in northern counties. *J. F.*

Birds and Fruit.—Like Mr. Johnson (p. 51), I also was much amused at Mr. Chapman's ideas of the "well-ordered system of nature." I shouted with laughter at them, because they reminded me so much of the extraordinary notions about the "necessaries of life" that we used to read about in the papers during the war; things like bacon, beer and tobacco being generally looked upon as such, amongst others. So far from this being the case, the truth is that man would be far better off without them. According to Genesis, man was given dominion over nature, and like most tyrants, he has abused his power and made a mess of things; for this, as is only just, he suffers, for "Man's an adept at getting in Nature's way, and trouble's the price he's compelled to pay." I quite agree with Mr. Johnson that bird-protection must be carried out with due circumspection, or species ordinarily useful may become destructive if allowed to increase unduly. There have been many instances of this on record, and a good many of them have been due to that curse of our country, the game preserver, who very selfishly keeps down the birds and beasts of prey for the sake of his absolutely unnecessary pheasants, and thus encourages the undue increase of many creatures which, if kept within *natural* bounds by nature's policeman would be beneficial to the community in general. As for "Doyenné du Comice," why try to grow it at all, if doing so necessitates destroying the birds? After all, that and other Pears are only luxuries, and there are plenty of others quite as good, and probably better, from the food point of view. May I ask Dr. Durham (p. 451, Vol. LXXXII) what business he has to retain an antique tree "swarming with woolly aphis, Apple sucker, etc., etc.," in his grounds? Is he not in a similar position to the man who was fined the other day for allowing his garden to produce weeds unchecked? It seems to me that both nuisances are equally a menace to neighbours. *C. Nicholson.*

SOCIETIES.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.

The Annual General Meeting of subscribers to this gardening charity was held on January 26, at Simpson's Restaurant, Strand. The chair was occupied by Mr. Leonard Sutton. There were present Sir John Smith Young, Master of the Worshipful Company of Gardeners, Major E. J. Monro, and Messrs. P. R. Barr, A. Dawkins, J. F. McLeod, P. G. White, H. G. Cox, Charles H. Curtis, A. C. Bartlett, J. B. Linford. A. J. Wood, D. Ingamells, A. Bullock, W. O. Hiehle, L. George and J. P. Rochford. The minutes of the preceding meeting were read and confirmed. The Secretary, Mr. George J. Ingram, then read the Report of the Committee, of which the following are extracts :—

Extracts from the Report.

The Committee have great pleasure in presenting their Annual Report, together with a Statement of Accounts (as audited) for the year 1927. They are glad to be able to again congratulate the subscribers of the Charity on its continued prosperity and ever increasing benefit to those who have been forced by adverse circumstances, through no fault of their own, to appeal for assistance. There were at the beginning of the year 250 annuitants, men and widows, on the funds. During the past year, thirty-three have passed away, twelve of them leaving widows, whose cases have been investigated and found to be deserving. These have been placed on the funds for the Widows' Annuity under Rule 111-13. There are to-day a list of fifty approved candidates seeking election, thirty men and twenty widows, and from that number the Committee recommend the subscribers to elect twenty-five. In thus increasing the number of beneficiaries on the funds, the Committee trust they will have the approval and support of every friend of the Institution. Although there will remain twenty-five unsuccessful candidates on the waiting list, it is a source of thankfulness to know that these poor people will be assisted from the Victorian Era Fund and the George Monro Memorial Fund. During the past year twelve persons were helped from the first-named fund, and ten from the latter, whilst from the Good Samaritan Fund grants of money, in varying sums, were given to twenty-eight persons in distressed circumstances.

The Annual Festival Dinner, held at the New Princes Galleries on June 29, proved most successful, a substantial sum being obtained toward carrying on the work. The Committee acknowledge their indebtedness to Major-General The Rt. Hon. Lord Treowen, who so kindly presided. They also offer their very sincere thanks to those who, by their services, contributed to the success of the Festival.

The Committee tender their thanks to the Lord Northbourne, the Viscountess St. Cyres, the Lady Battersea, Brigadier-General R. Cooper, Mr. C. Dyson Perrins, J.P., and Mr. Roger Corbet, J.P., for having allowed their beautiful gardens to be opened to the public for the benefit of the Institution. They also express their thanks to the promoters of concerts, etc., in aid of the funds, amongst whom may be mentioned Mr. Charles H. Cook, Windsor; Mr. Thomas H. Cook, Sandringham; and Mr. W. Auton, Woking; members of the Liverpool and Worcester Auxiliaries and the Altrincham and District Gardeners' Improvement Society. Sincere thanks are likewise tendered to Messrs. Geo. Cobley and Co. (Chartered Accountants), and to Messrs. Ralph Bond, Veitch and Bilney (Solicitors) for their valued honorary services.

The several Auxiliaries have again assisted in augmenting the funds, and thanks are accorded to the Hon. Secretaries and Hon. Officers for their much appreciated services.

The Committee acknowledge with gratitude the receipt of the following legacies from warm-hearted supporters who have, unfortunately, passed away, viz. :—Mrs. M. Monro, J.P., £500 to establish a "Mrs. George Monro Fund" (to provide an annuity); Mr. W. C. Siocock, V.M.H., £250; Mr. Thomas Manning, £100; and Mr. W. L. Corry, £50.

With feelings of great regret the Committee record the deaths of many friends and supporters during the past year, notably the Viscount Bearsted, who presided at the Festival Dinner in 1011, and was a most generous contributor to the funds, also Viscountess Bearsted; the Lord Kenyon, Mr. Henry Jones, an annual subscriber for fifty years. Mr. David King, Mr. Thomas Manning, Hon. Auditor for many years, Mr. C. A. Bayford, and Mr. John White.

The Committee announce that the eighty-third Anniversary Festival Dinner in aid of the Funds will be celebrated in June next, when the Rt. Hon. the Viscount Lascelles has kindly promised to preside.

The Committee earnestly invite the co-operation of present supporters in procuring new subscribers, especially amongst gardeners and those who may at some time be compelled to seek its assistance, so that the work may be enlarged, and the ever-increasing number of applicants helped and benefited.

LEONARD SUTTON,
Chairman of Committee.
GEORGE J. INGRAM,
Secretary.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION GENERAL FUND.

For the Year Ended December 31, 1927.

RECEIPTS.

	£	s.	d.	£	s.	d.
To Balance at Bankers, 1, January, 1927	1,326	8	4			
Balance on deposit, 1st January, 1927	4,000	0	0			
Cash in hand, 1st January, 1927	1	5	1			
				5,327	13	5
Annual Subscriptions ...	1,157	0	6			
Donations and Legacies ...	3,052	7	3			
Schröder Annuity... ...	20	0	0			
Dividends and Interest ...	1,263	8	0			
†Income Tax refunded for 1925-6	167	16	5			
				5,660	12	2
				£10,988	5	7

PAYMENTS.

	£	s.	d.	£	s.	d.
By Annuities and Gratuities...				4, 316	13	4
Administration :						
Rent, Fuel, Lighting and Salary of Secretary and Clerk	689	13	4			
Expenses of Annual Meeting and Election ...	6	5	3			
Printing and Stationery £131 4 3						
Less Advertisements ... 30 15 0	100	9	3			
Advertising— Fry's Charities	2	12	6			
Cheque Books	15	1	8			
Postages, Reports, Polling Papers, Appeals and Ordinary	52	17	3			
Telephone Charges ...	9	14	4			
Carriage, Telegrams, Typing, etc.	17	1	0			
				893	14	7
Total				£5,210	7	11
*The Prince of Wales Commemoration (Festival) Fund— £1,982 8s. 3d. War Loan, 5%, 1929-47	—			2,000	0	0
Mrs. Geo. Monro Fund— £505 11s. 9d. New South Wales5 % Stock,1 935-55	—			500	0	0
Balance at Bankers, 31st December, 1927... ...	1,371	2	2			
Balance, Deposit, 31st December, 1927 ...	1,900	0	0			
Cash in hand, 31st December, 1927	6	15	6			
				3,277	17	8
				£10,988	5	7

* £1,250 will be required to meet the quarterly payments due on December 31, 1927.

† The Income Tax Refund for 1926-7 has not been received yet.

We have examined the attached accounts of Receipts and Payments with the books and vouchers, and we certify that to the best of our information they are correct.

We have also verified the Investments and the bank balances of the Institution.

(Signed) GEORGE COBLEY & CO.,
Chartered Accountants. (Hon. Auditors).

The Chairman, in moving the adoption of the Report and the Balance Sheet, thanked the Committee on behalf of the meeting for the excellent manner in which they had conducted the affairs of the Institution during the past year, which had been so prosperous as any in the past. He spoke with regret of the loss sustained by the Institution in the death of several prominent subscribers, and referred especially to the late Viscount Bearsted. The adoption of the Report was seconded by Mr. D. Ingamells, and was accepted without further comment.

The rest of the proceedings were purely formal and consisted of the re-election of Mr. E. Sherwood, Hon. Treasurer, and Mr. G. J. Ingram, Secretary; the retiring members of Committee were re-elected *en bloc.*

Sir J. Smith Young, in moving the re-appointment of Mr. G. J. Ingram as Secretary, spoke of the fine work that had been accomplished by Mr. Ingram, who had occupied this post for thirty-eight years, in making the Institution such a fine source of assistance to those in need.

Messrs. H. G. Cox, P. G. White, D. Ingamells and Major Monro were appointed scrutineers, and the meeting adjourned for the scrutiny of the Ballot.

The Ballot was declared about 5 o'clock. The successful candidates, with the number of votes polled, were :—Mrs. Bessie Barnard, 5,720; Mrs. Alice Clare, 5,438; Mr. James Exell, 4,113; Mr. T. le Grys, 3,849; Mr. John Roberts, 3,719; Mr. W. Williams, 3,632; Mrs. Sarah Taylor, 3,623; Mrs. M. Hinxman, 3,553; Mr. J. D. Simmons, 3,368; Mrs. H. Hughes, 3,317; Mrs. S. A. Osman, 3,300; Mr. James Woodward, 3,268; Mrs. S. R. Atkins, 3,246; Mr. T. Garner, 3,129; Mr. H. Vickery, 3,068; Mr. W. E. Reeves, 3,007; Mr. J. Pople, 2,600; Mr. J. Fulford, 2,581; Mrs. A. Jones, 2,574; Mr. J. Cruickshank, 2,317; Mrs. E. Witts, 2,259; Mr. J. H. Wills, 2,256; Mrs. A. Thomson, 2,248; Mrs. R. Plumb, 2,205 and Mr. G. Johnson, 2,174. Mr. M. Crisholm and Mrs. L. Moore-Sara received annuities of £20 and £16 respectively, and Mr. George Reed, received a grant of £20 a year from the Mrs. George Monro Fund.

A vote of thanks was passed to the Chairman, and the Scrutineers, and this concluded the meeting.

ORCHID CLUB.

At the exhibition meeting held at Manchester on January 20, several collections were represented by large and interesting groups, Calanthes, Dendrobiums and Lycastes making their first appearance this season.

Premier Diploma.

Odontoglossum Sheila Stephenson, var. Atholl House.—A large flower, three-and-a-half inches across and of particularly good form; the petals, two inches deep, are white, with a fimbriated edge, marked centrally with large crimson blotches. The sepals are rosy with crimson blotches, and the large, oblong, flat lip is white, with two large crimson spots and a bright yellow crest. Shown by Sir William Thom.

Cypripedium Chrysostom, var. Mary Crawford.—A large flower of good form. The flat, oval dorsal sepal, four-and-a-half inches across, is white, with a small, green luna, and crimson spots in the central area, the edge being slightly frilled. The petals and lip are well displayed, yellowish green, marked with crimson lines. Shown by B. J. Beckton, Esq.

Diploma of Merit,

Cypripedium Mafalda (*C. Osric* × *C. Alcibiades Illustris*).—A pleasing flower carried on a long stem. The flat, orbicular, dorsal sepal is three inches across, white, with a small, emerald-green luna and a narrow, median, crimson stripe; the petals and lip are well displayed, green, stained with crimson. Shown by Dr. Craven Moore.

New Hybrids.

The following new hybrids were submitted for registration:—Cypripedium Neeta (C.

Ballyhandy × C. Lathamianum), from B. J. Beckton, Esq.; C. Mauretania (C. Memoria F. M. Ogilvie × C. Alcibiades Illustris); and C. Mowgli (C. Daffrosum × C. Lady Dillon), both from Dr. Craven Moore.

Groups.

Sir William Thom (gr. Mr. Williams) exhibited a strikingly arranged group of Cypripediums and Cymbidiums, including a beautiful Cypripedium Athollii, C. Lord Wolmer var. Plutus of specially good form, and an interesting series of C. Tankerville hybrids, and hybrids of C. aureum. Among the Cymbidiums, Golden Emblem and Marten var. Moonlight were conspicuous. Mrs. Stockwell (gr. Mr. Weaver) showed a small selection of beautifully-grown Cypripediums and Calanthes, including the brightly-coloured Calanthe George.

Dr. Craven Moore (gr. Mr. Gilden) arranged a magnificent group of Odontoglossums and Cypripediums. Among the former were several fine varieties of O. crispum Rosalind (Rossendale × Empress of India), specially fine forms of white crispums, O. Hardyanum O. Princess Yolando with a large, branched spike carrying many beautifully formed flowers of rich purple; O. Serapis and a selection of O. armainvillierense xanthotes. The Cypripediums included large plants of C. Gold Mohur. C. F. Spencer, C. Noel Hardy and C. Corsair, Holford's var.

Mrs. Hardy showed a small selection of Dendrobiums, including D. Tyntesfield, D. Gatton Monarch and D. Lady Colman. B. J. Beckton, Esq. (gr. Mr. Stewart), showed a large group of Calanthes intermixed with Cypripediums. Among the Calanthes were the deep-coloured C. Angela and C. Norman, the clean-coloured C. Glad Eye, the beautiful pure pink C. Phoebe, and about twenty plants of the brightly-coloured C. George. The Cypripediums included a beautiful plant of C. Olympus var. The Chairman, and other well-known kinds. Among the species were the rare Pleurothallis longissima bearing several spikes of canary-yellow, sweetly-scented flowers; the pretty, little Epidendrum polybulbon in several varieties, and Masdevallia Schröderiana.

A. T. Cussons, Esq. (gr. Mr. Dalgleish), exhibited a large group of Cypripediums and Cymbidiums. Among the latter fine varieties of C. Castor, C. Erica, C. Schlegelii and C. Wiganianum were particularly noteworthy. Cypripedium Onward had two elegant flowers of remarkably good shape, and there was an interesting plant of C. Hookeriae var. Bullenianum. F. T. Paul, Esq., contributed a selection of Cypripediums including C. Cardinal Mercier, C. Tracery, and C. Antinous, and fine varieties of Lycaste Skinneri. John Jackson, Esq., exhibited a beautiful plant of the white Laelia anceps var. Bull's alba.

BANFFSHIRE HORTICULTURAL.

The members of this Association, the annual meeting of which was held in Banff, have every reason to congratulate themselves. They started 1927 with a balance of £461 7s. 4d., and have entered 1928 with the funds standing at £547 16s. 6d., a profit of over £86. As Provost Gordon, President of the Association, said, it was a most satisfactory state of affairs. He then announced, amid every manifestation of regret, the resignation of Mr. John Mann, Secretary, owing to ill-health. Mr. Mann's devotion and assiduity to the welfare of their association was beyond all praise, and he (Provost Gordon) attributed no small share of the satisfactory condition their association was now in to Mr. Mann's careful handling of affairs. Mr. Vincent Desson was appointed to succeed Mr. Mann, and all the other office-bearers were re-elected.

It may be added here that Banff for several years past has been a prominent landmark in gardening circles in Scotland, for it is in Banff where Mr. Grigor, the noted Sweet Pea grower, has his home, and it is in Banff that he produces those exquisite specimens of these famous flowers which have gained for him innumerable successes at the leading Scottish exhibitions for a number of years past.

ROYAL HORTICULTURAL.

January 31.—There was a distinct spring-like character in the exhibits at this fortnightly meeting of the R.H.S. at Vincent Square, Westminster. The principal subjects before the Floral Committee were a large collection of forced bulbs; pleasant little rock gardens, lightly planted with Crocuses, Snowdrops, dwarf Irises, Saxifrages and other appropriate plants; forced flowering shrubs, and the usual collections of greenhouse Carnations. There were several interesting displays of Orchids and one very good collection of Apples. Novelties were fewer than might have been expected in view of the increased quantity of exhibits. The Orchid Committee recommended one award to a new variety and the Floral Committee recommended two Awards of Merit to flowering plants. There were also exhibits of garden sundries, paintings of flowers and garden scenes and a well preserved herbarium of British plants.

Orchid Committee.

Present: Mr. C. J. Lucas (in the Chair), Mr. Gurney Wilson (Hon. Sec.), Mr. Frederick J. Hanbury, Mr. Lionel de Rothschild, Mr. R. Brooman White, Mr. Sidney W. Flory, Mr. Arthur Dye, Mr. Fred. K. Sander, Mr. J. E. Shill, Mr. Charles H. Curtis, Mr. Robert Paterson, Mr. John C. Cowan, Mr. A. McBean, Mr. T. Armstrong, Mr. E. R. Ashton, and Mr. J. Wilson Potter.

Before proceeding with the business of the Committee, Mr. C. J. Lucas referred to the loss sustained by the death of Mr. John Cypher, and at his suggestion it was agreed that a letter of sympathy be sent to Miss Cypher.

Award of Merit.

Cypripedium Jungfrau (Miss A. A. Locke × Christopher var. Grand Duke Nicholas.)—A bold hybrid with a very broad, white, green-based dorsal sepal and light green petals and lip. The petals are softly stained with greenish purple and the green base of the dorsal sepal is spotted with dark purple, a few of the spots extending to the white area. Shown by F. J. Hanbury, Esq., (gr. Mr. Farnes), Brockhurst, East Grinstead.

Groups.

Baron Bruno Schroder (gr. Mr. J. E. Shill), Dell Park, Englefield Green, showed a fine form of Miltonia Lycaena, Cypripedium Sophocles, and Cattleya Araca.

Messrs. Charlesworth and Co. were the largest exhibitors of Orchids on this occasion and their bright and attractive display was greatly admired. Odontoglossums were finely shown, notably O. crispum xanthotes, O. Omega, O. xanthium, O. Victoria and O. Regium. Odontioda Chanticleer gave as plash of vivid colour while Cattleya Zephyr was very beautiful. Other good things in this group were Cypripedium Chrysostum, Dendrobium Gatton Monarch, D. Euryalis Apollo and Cynorchis Lowii, while botanical species included Restrepia stricta, Masdevallia polysticta, Trias picta, and Pleurothallis astrophora, the latter having minute, purplish flowers.

Cymbidiums were a prominent and pleasing feature of the large group of Orchids arranged by Messrs. Sanders. With these were associated the yellow Oncidium splendidum, one of which, named xanthina, had giant pale yellow flowers, with the brown colouring almost suppressed in the sepals and petals; a large variety of forms of Lycaste Skinneri, and good examples of Vanda Watsonii, V. Amesiana, Zygopetalum Mackayi, the dainty Odontoglossum pulchellum and the quaint Gomeza planifolia.

Messrs. Cowan and Co. submitted an attractive group that contained Oncidium splendidum, Cymbidiums in variety, many excellent Cypripediums, Odontioda Kathleen, Odontoglossum scintillans—a pretty Rossii cross, several beautiful white varieties of O. crispum, Cattleya Clotho and Laelio-Cattleya Natalie.

Messrs. J. and A. McBean showed some finely grown examples of Odontoglossum Minataur, O. crispum, O. Talana, O. Cumbe, O. Aphrodite, Brasso-Cattleya Springtide, a big Laelio-Cattleya Schroderae, carrying two seven-flower spikes of handsome flowers, L-C. Sunbelle, Cymbidium Schlegelii and Odontioda Diana.

Messrs. Stuart Low and Co. brought up a few Orchids, the principal being Platyclinis Cobbianum, Dendrobium Chessingtonense var. King Cup, Vanda Amesiana, and the brilliant Brasso-Laelio-Cattleya Lilian. Messrs. Black and Flory exhibited a robust set of Cypripediums that included C. Stamperland, C. Baldoran, C. Golden Wren, C. Atlantis and C. Denhan.

Mr. Harry Dixon submitted forms of Lycaste Skinneri, a large plant of Platyclinis uncata, and Cypripedium Roger Sander. Mr. W. J. Brown (gr. Mr. Thurgood), Shepperton, sent Cymbidium Erica Sander var. Alicia with pale green flowers.

Floral Committee.

Present: Section A.—Mr. Henry B. May (in the Chair), Mr. J. F. McLeod, Mr. Arthur Turner, Mr. C. F. Langdon, Mr. H. J. Jones, Mr. J. M. Bridgeford, Mr. Wm. Howe, Mr. Hugh Dickson, Mr. R. Findlay, Mr. D. Ingamells, Mr. A. E. Vasey, Mr. Jas. B. Riding, Mr. W. B. Gingell, Mr. D. B. Crane, Mr. Chas. E. Pearson, Mr. S. Helen Lindsay Smith, Mr. G. W. Leak, Mr. Courtney Page, Mr. E. R. Janes and Mr. W. D. Cartwright, Secretary.

Section B.—Mr. Gerald W. E. Loder (in the Chair), Mr. G. Reuthe, Mr. F. J. Preston, Mr. E. H. W. Wilding, Lady Beatrix Stanley, Mr. G. Yeld, Mr. T. Hay, Mr. L. R. Russell, Mr. Charles T. Musgrave, Sir William Lawrence. Bt., Mr. R. C. Notcutt, Mr. Mark Fenwick, Mr. Arthur Bedford, Hon. Henry D. McLaren, Mr. E. A. Bowles and Mr. N. K. Gould, Secretary.

Awards of Merit.

Strobilanthes isophyllus.—This Indian sub-shrub was shown as being "a good house plant." It was introduced in 1845, and a tolerable illustration appears in the *Bot. Mag.*, Fig. 4,363, under the name of Goldfussia isophyllus. The little plants shown were of almost erect habit and branching freely at an early stage. The opposite, lanceolate leaves are stout, shining, and about three inches long. The Pentstemon-like flowers are lilac-coloured, and the buds are tinted with orange-fawn. Shown by Sir William Lawrence, Bt. (gr. Mr. Everett), Burford, Dorking.

Rhododendron Rhodora.—A well-grown bush of this deciduous species was shown under the old garden name of Rhodora canadensis. It is a native of Eastern North America and was introduced in 1767. It differs from nearly all the other deciduous Rhododendrons in its curious two-lipped corolla and in having ten stamens. This dwarf shrub is rightly valued for its early flowering and it is very attractive either in the shrubbery border or as a forced shrub for conservatory decoration. The flowers are between one inch and two inches across and of bright rosy purple colour when grown in the open ground. On forced plants the flowers are usually rather paler in colour. Shown by Messrs. J. Cheal and Sons.

Groups.

A large collection of forced Dutch and other bulbs was arranged by Messrs. Sutton and Sons with considerable taste, and made an exceedingly attractive exhibit. There were many bowls of decorative Hyacinths that well illustrated the ease with which the specially prepared bulbs may be forced into flower very early in the year. These prepared Hyacinths were shown in distinct colours, as also were the many-flowered "Cynthella" Hyacinths. Tulips also formed an important feature of the exhibit and these included such valuable varieties as the double-flowered Murillo, Rose Gris de Lin, of bright pink colour; Sparkler, deep scarlet; Mr. van Tubergen, rich yellow; Tournesol, scarlet and yellow, and Vermilion Brilliant. Towards the front of this large display there were floriferous bowls of Iris reticulata, Crocuses in many colours, Lily of the Valley and Freesia refracta alba.

An attractive group, set up by Messrs. Stuart Low and Co. contained some good Hippeastrums, tall plants of Acacia Baileyana, Daphne indica, Ardisia crenata and Thyrsacanthus rutilans. Adjoining these miscellaneous plants they displayed Carnations, amongst which the Fancy varieties Daphne, Melchet Beauty and Lady Hindlip were conspicuous. Messrs. C. Engelman, Ltd., had a goodly collection of Carnations which included especially fine vases of Laddie, Topsy, Master Michael Stoop, Maine Sunshine and Spectrum. Messrs. Allwood Bros. staged in their exhibit of Carnations, a vase of an attractive new Fancy variety named Velvet. It is of deep ruby-crimson colour faintly marked with maroon. A large vase contained many blooms of Maud Allwood of glowing orange colour.

A number of well-grown plants of Epiphyllum truncatum, shown by Messrs. L. R. Russell, Ltd., bore large numbers of the showy, pendulous flowers and well illustrated its great decorative value. They also staged a flowering plant of Aloe arborescens and the richly-scented Boronia megastigma. Alongside these greenhouse plants Messrs. L. R. Russell had a group of Hamamelis in variety, Skimmia japonica, bearing quantities of bright berries, and Azalea Hino Manyo.

Messrs. R. Gill and Son set up a number of bright trusses of Rhododendrons gathered from bushes grown in the open in Cornwall. The chief sorts were Rhododendron Cornubia, R. Nobleanum and R. argenteum. By the side of the Rhododendrons they staged a quantity of Anemones of their selected "Poppy" strain. Sir Frederick Moore, Willbrook, Rathfarnham, Co. Dublin, sent a well-formed truss of the bright, red Rhododendron Shepherdii from the open. Some well-flowered bushes of Prunus triloba fl. pl., deciduous Magnolias and Azalea mollis varieties were grouped by Messrs. J. Cheal and Sons who also showed a small rock garden with a background of dwarf Conifers and Skimmia japonica and planted with Crocus versicolor, C. Sieberi C. Large Yellow, Anemone Hepatica coerulea and other early spring flowers.

A well-designed rock-garden in weathered Cumberland stone was exhibited by Messrs. Wm. Cutbush and Sons. In the background they had a pleasant grouping of dwarf Conifers, Andromeda japonica, Skimmia japonica, Ericas and other shrubs. Amongst the boulders were planted Christmas Roses, Iris reticulata, I. sind-pers, Crocuses, Scillas and Azalea Hino Manyo. Mr. F. J. Wood had an exhibit of dwarf Conifers and other shrubs with a foreground of Primroses, Pulmonarias, Snowdrops and Christmas Roses.

A very meritorious exhibit was staged by Messrs. Barr and Sons who displayed especially well-grown batches of Crocus versicolor picturatus, C. Sieberi, C. Golden Yellow and other forms, Iris reticulatus, Galanthus byzantinus, Narcissus nanus, the rich blue Tecophilaea cyanocrocus and other valuable spring subjects with a background of exceedingly floriferous bushes of Forsythia spectabilis. Mr. John Klinkert had a good corner group of well-formed Topiary specimens in evergreen Box.

Messrs. Wm. Wood and Son showed a low rockery planted with dwarf Conifers, Iris sind-pers, Muscari, Crocuses and Primulas, and Messrs. Pulham and Son also had a small rock garden exhibit in which they displayed Conifers, several Saxifrages and a Morisia.

An exceedingly attractive display was made by Messrs. James Carter and Co. with many baskets of particularly well-flowered plants of Primula malacoides var. Princess Mary, forced Daffodils and Prunus triloba.

An unusual exhibit was staged by Mr. R. Findlay, Junr., in the form of a collection of herbarium specimens representing the ninety-nine Natural Orders of plants that are native to the British Isles, as given in the *London Catalogue*. They were extremely well mounted, and included many that were said to be rare subjects. Meconopsis cambrica from Mount Snowdon; Myosurus minimum, a rare Ranunculad; Matthiola incana, the Gilliflower, Frankenia laevis from Bleakney Point, and Elatine Hydropiper, which Mr. Findlay found growing in deep water in Frensham Ponds, are all comparatively rare, while others that are by no means common were Lathyrus niger, Geranium purpureum, apparently only to be found in four localities; Dryas octopetala, a popular alpine garden subject; Pinguicula lusitanica, Lobelia Dortmanna found growing in Lake Ogwen, Pyrola rotundifolia var. arenaria, and Mertensia maritima. The Order Gentianaceae was represented by Gentiana pneumonanthe, G. campestris, and the annual Microcala filiformis, while of the numerous Orchids shown perhaps the most uncommon were Orchis purpurea, Herminium monorchis, Ophrys muscifera, and Epipactis latifolia var. viridiflora.

Horticultural sundries were not so evident as at the previous meeting. Messrs. Wm. Wood and Son staged a representative collection of garden tools and requisites; Messrs. John Allen and Sons (Oxford) Ltd., exhibited the "Oxford Roadless" Barrow, that has tractor wheels and is claimed to be useable wherever a man can walk; Messrs. C. White had constructed an attractive summer-house, and other decorative garden structures, and Messrs. C. H. Pugh, Ltd., displayed types of "Atco" Motor Mowers. Garden ornaments, staged by the Empire Stone Company, Limited; fertilizers and insecticides by Jeyes Sanitary Compounds Co., Ltd., Messrs. Allwood Bros., and Messrs. Murphy and Sons, pruning implements by Mr. C. A. Jardine, and garden tools and sundries by Messrs. Richard Melhuish, Ltd. were other features.

Fruit and Vegetable Committee.

Present: Mr. A. H. Pearson (in the Chair), Mr. J. Cheal, Mr. A. W. Metcalfe, Mr. T. Pateman, Mr. A. Bullock, Mr. W. F. Giles, Mr. J. Wilson, Mr. G. Kelf, Mr. W. H. Divers, Mr. H. Markham, Mr. G. Tinley and Mr. A. N. Rawes (Secretary).

Messrs. Stevens and Son, Sidmouth, exhibited a new Apple named Woolbrook Russet (King's Acre Pippin × Bramley's Seedling). This Apple was shown at the previous meeting, when the Committee asked to see it in a cooked state. It is similar to Bramley's Seedling in size, shape and keeping qualities, but is claimed to be superior to that variety in that it has a distinctly pleasant flavour and is therefore suitable for dessert. It was recommended for trial at Wisley.

Groups.

Messrs. George Bunyard and Co. again, exhibited a magnificent collection of late-keeping Apples, comprising in all 114 varieties, both culinary and dessert. They were all in an excellent condition, firm in texture and in most instances beautifully coloured. Such well-known varieties as Warner's King, Blenheim Pippin, Ribston Pippin, Emperor Alexander, Charles Ross, a variety usually considered unsuitable for consumption after November, Reinette du Canada, and the small but richly-flavoured Cockle's Pippin, were well represented. Ellison's Orange, a richly-coloured dessert Apple, Upton Pine, Rival and Jonathan looked particularly appetising, while other notable varieties were Gascoyne's Scarlet, Beauty of Kent, Dredge's Fame, Allen's Everlasting, Braddick's Nonpareil, and Rosemary Russet.

The following awards have been made to the undermentioned vegetables by the Council of the Royal Horticultural Society, after trial at Wisley.

Beet.

Awards of Merit.

Long Varieties.—*Dainty* (104), sent by Messrs. J. Carter and Co.; and *Long Dark Red* (110), sent by Messrs. Zg. Nunhem.

Highly Commended.

Purple (87), sent by Messrs. Dobbie and Co., Ltd.; and Dwarf Selected (Nutting) (105), sent by Messrs. Barr and Sons.

Spring Sown Onions.

Awards of Merit.

Bulbs Flat-round (Yellow Varieties).—*White Spanish Selected* (13), sent by Messrs. W. Nutting and Sons; *Nuneham Park* (20, 21), sent by Messrs. Barr and Sons and Messrs. J. Carter and Co.; *Exhibition* (28), sent by Messrs. Harrison and Sons; and *Yellow Flat Dutch* (119), sent by Messrs. Zwaan and Van der Molen.

Bulbs Oval (Yellow Varieties).—*Ailsa Craig* (pale form) (41, 43), sent by Messrs. Watkins and Simpson and Messrs. Harrison and Sons; *Ailsa Craig Selected* (darker form) (46, 48), sent by Messrs. R. Veitch and Son and Messrs. Wheelers; *Long Keeper* (55), sent by Messrs. Barr and Sons; and *Lemon Rocca* (80), sent by Messrs. W. Nutting and Sons.

Bulbs Flat-round (Brown Varieties).—*Autumn Triumph* (78), sent by R.H.S., Wisley.

Bulbs Oval (Brown Varieties).—*Long Keeper* (85), sent by Messrs. J. Carter and Co.

Highly Commended.

Bulbs Flat-round (White Varieties).—Silverskinned of May (3), sent by Messrs. Herb; and Large Flat White Italian (10), sent by Messrs. W. Nutting and Sons.

Bulbs Flat-round (Yellow Varieties).—Rousham Park Hero (23), sent by Messrs. Watkins and Simpson; Giant Zittau (33), sent by Messrs. Olsen; Odourless (37, 38), sent by Messrs. Johnson and Messrs. J. Carter and Co.; and Zrijndrechter Selected (121), sent by Messrs. Zwaan and Van der Molen.

Bulbs Oval (Yellow Varieties).—Silver Globe (11), sent by Messrs. Barr and Sons; Density (69), sent by Messrs. Cooper, Taber and Co.; Ailsa Craig Selected (100), sent by Messrs. Dobbie and Co.; and Rijnsburger Ui (107), sent by Messrs. Zg. Nunhem.

Bulbs Oval (Brown Varieties).—James' Keeping (83), sent by Messrs. W. Nutting and Sons.

Bulbs Flat-round (Red Varieties).—Brunswick (87, 88), sent by Messrs. Daehnfeldt and Jensen, and Messrs. Olsen; Dutch Blood Red (89), sent by Messrs. Daehnfeldt and Jensen; and Flat Dutch Blood Red (124), sent by Messrs. Zwaan and Van der Molen. These two last were considered to be alike.

Bulbs Oval (Red Varieties).—Crimson Globe (92), sent by Messrs. Barr and Sons.

Commended.

Bulbs Flat-round (White Varieties).—White June (8), sent by Messrs. Herb.

READING AND DISTRICT GARDENERS'.

The fortnightly meeting of this Association was held in the Abbey Hall on January 22, when, despite the unfavourable weather, Mr. W. Broomfield presided over a large attendance, and six new members were elected. Mr. H. Cook, of the Reading University Gardens, gave an instructive lecture entitled, "Insect Pests and Fungoid Diseases: Some Remedial Measures."

He dealt chiefly with those pests which attack plants that are grown under glass, and gave much valuable information with regard to the methods that may be employed for the destruction of each pest, laying emphasis on the maxim that prevention is better than cure.

A short discussion followed, after which it was proposed that the lecturer should deal further with this subject during the autumn. This Mr. Cook kindly consented to do.

Mr. A. H. Dow, of Southampstead House Gardens, was awarded the first prize for a well-flowered plant of Cypripedium insigne.

MOSSPORT (GLASGOW) HORTICULTURAL.

Mr. J. B. Jack, the Superintendent of the Motherwell Public Park, delivered a lecture on "Chrysanthemums" to a well-attended meeting of the Mossport (Glasgow) Horticultural Society, on January 19.

He discussed in detail the culture of the various types of Chrysanthemums, and emphasised the desirability of using basal shoots in preference to stem growths, as cuttings, suggesting that plants obtained from the latter are inclined to develop flower buds prematurely. He described the various methods adopted for propagating Chrysanthemums, and advised the use of shallow boxes, covered with sheets of glass, for this purpose.

Mr. Jack's advice with regard to the potting and growing of the plants was both interesting and instructive, and displayed a complete knowledge of the subject with which he dealt.

NATIONAL CARNATION AND PICOTEE.

THE Annual General Meeting of the National Carnation and Picotee Society was held on January 21. There was a large attendance, which included several new members.

The Officers and Committee were re-elected, with the exception of Mr. J. J. Keen, who has retired from the post of Hon. Treasurer, a position he had held for many years. His place has been taken by Captain Wilkinson, a fellow townsman and keen Carnation grower.

Mr. Keen's services to the Society cannot be overestimated, and it is a pleasure to record that his valuable advice and knowledge will still be available, as he will continue to be a member of the Committee.

The finances of the Society, under Mr. Keen's supervision, have always been, and still are, highly satisfactory, while the list of members continues to grow. It is hoped that the Annual Carnation Show, which takes place in July at the Royal Horticultural Society's Hall, will create a record, and that those interested will communicate with Miss J. B. Wells, Hon. Assistant Secretary, 19, Jeffrey's Road, S.W. 4.

TRADE NOTES.

OWING to the great variation in the notices requiring returns for assessment under the Rating and Valuation Act, 1925, issued by the Local Authorities, the Land Union received requests from owners and occupiers who are at a loss to know what particulars they may lawfully be required to give. Under the Act, Rating Authorities may require from the owner or lessee of any heriditament "such particulars as may be reasonably required for the purpose of carrying out the Act." In other words, may require information which will enable them to arrive at the annual value of the property concerned.

Many of the "Notices Requiring Returns" go far beyond the provisions of the Act, and include questions that are not only irrelevant, but the answers to which may prejudice a prospective appellant. The Council of the Land Union having carefully considered the matter advise persons called upon to make a return that the only information which can properly be demanded is as follows:—The situation, name of occupier and owner and general description of the property. If let, the rent payable, the term of years for which the lease or agreement has been granted and the dates thereof, also a statement as to who is liable for repairs and rates, etc. All other questions, such as the rent paid in 1914, the purchase price of the property, the date of purchase, and whether this purchase included the buildings and the land, are, in the Council's opinion, *ultra vires*, and not in the least necessary for the purpose of arriving at the annual value. Moreover, where the person making the return is the owner of other properties, there is no necessity to give this information upon the form. Particulars of shooting or fishing rights or of the average receipts from minerals situate beneath the property may also be omitted.

Many of the forms being issued by the Authorities are not warranted and, in the opinion of the Land Union, the only information which can be reasonably required is that referred to above.

PATENTS AND TRADE MARKS.—Any of our readers requiring information and advice respecting Patents, Trade Marks or Designs, should apply to Messrs. Rayner and Co., Patent Agents, of 5, Chancery Lane, London, who will give free advice to readers mentioning *The Gardeners' Chronicle.*

Obituary.

William McDonald.—With tragic suddenness, and while attending a wedding party, Mr. William McDonald, the esteemed Superintendent for many years of Elgin Cemetery, fell dead among a group of his friends. To see him one would have felt inclined to think he had a long life before him, so robust and strong did he look. But it was otherwise. As to his work and worth, no better tribute could be paid to his memory than that given by Mr. John L. Hepburn, the Chairman of the Cemetery Committee of Elgin Parish Council. We have met to-night, he said, addressing his fellow councillors, under very sad circumstances. We have suffered a great blow in the death of Mr. McDonald. As a committee we all feel his loss keenly. He was a valued official of this board, and gave us excellent service. We all know the interest he took in his work and his faithfulness to duty. We know how beautifully, under him, the grounds of the cemetery were kept; how courteous he was to all who had dealings with him, and his deep sympathy with every class of the community in their times of sorrow. In business matters also, we admired the way in which his books were kept, and in all his relations with us as a board. I think there will be only one opinion—that we had in Mr McDonald a straight, manly and honourable official with whose work we were entirely satisfied. We lament his sudden death and offer our deep sympathy to his widow and family.

These sentiments, be it noted, were warmly endorsed by every member of the committee. Mr. McDonald was trained by his uncle, and succeeded him as Superintendent of Elgin Cemetery.

Dr. A. Shoolbred, M.R.C.S., F.L.S.—It is with keen regret that we record the death of Dr. Shoolbred, of Chepstow, on January 25, 1928, in his 76th year. A native of Wolverhampton he came to Chepstow fifty years ago, and took a keen interest in the social and religious life of the town. He was a regular reader of *The Gardeners' Chronicle*, and in 1927 a discussion took place in these pages regarding the habitat of Lathyrus tuberosus, a plant he discovered in a collection of wild flowers at Chepstow Show. Dr. Shoolbred was a keen, learned, and enthusiastic botanist and gardener—a somewhat rare combination. His spare time was spent among plants, and for several years he devoted his leisure to compiling *The Flora of Chepstow*, published in 1920. The sequence and nomenclature adopted are those of the 10th edition of *The London Catalogue of British Plants*, and this work has proved of great value to all those interested in the local flora. It covers a fairly wide area, from the River Wye to 900 feet elevation, so the plants enumerated are varied in character. Perhaps his greatest joy was his beautiful garden; the stately old walls of Chepstow Castle forming a wonderful background. For over forty years he collected and purchased rare and choice subjects, and it was his greatest pleasure to be able to give a few plants, however rare, to his friends. "Large was his bounty, and his soul sincere." His garden contains one of the oldest Mulberry trees, and a peculiarly flat-growing form of the Maidenhair Tree. Shrubs were grown, but alpines were the special favourites. The rock-garden, and every corner and crevice in retaining walls were made to contribute their quota of plant life. Latterly, owing to failing health, he began to grow alpines in troughs raised on stones, so that he could still enjoy his plants at close quarters. He maintained his interest to the last, and only this winter his rock garden was extended, and a Lily pond added, but, alas! he never saw it planted. His knowledge of plants was known to many outside the Chepstow area, and he was always ready to help others, especially in the naming and classification of native species. Dr. Shoolbred will be missed greatly by all those connected with horticulture, but none will feel his loss so much as those who spent many profitable and pleasant hours in his garden, library, and home. The remains were laid to rest in Chepstow Cemetery on January 30, after a service in the parish church. The large congregation included several well-known nurserymen and gardeners, who came to mourn the loss of one, whose place—judged from the botanical and horticultural standpoint—will not be filled for many years.

ANSWERS TO CORRESPONDENTS.

CHILEAN PLANTS FOR THE ORKNEYS.—*J. H.* It is unlikely that trees from southern Chile and other parts of South America will thrive any better in Orkney than either European or North American trees, for in addition to the drawback of insufficient sun to thoroughly ripen the wood in summer, and too little cold in winter to check growth, there must be a good deal of trouble from wind. Probably the two most suitable South American trees would be Nothofagus obliqua and Araucaria imbricata. There should be no difficulty in procuring seeds of the latter for trial, for they are ripened every year in England, but seeds of the Nothofagus can only be obtained direct from South America. Seeds were received in England during 1927, and it is possible that some of the leading nurserymen may be able to supply a few plants for trial, but any large quantity of seeds would need to be procured direct from South America. Experiments with such trees as Scotch Pine, Common and Sitka Spruce, Birch, Aspen and Populus alba, Cupressus nootkatensis and Thuya plicata would probably lead to better results than experiments with South American trees.

DRESSING FOR APPLE TREE.—*T. W. S.* Your best plan will be to spray your trees with a lime-sulphur mixture in accordance with the instructions given so frequently in our columns.

DOUBLE-FLOWERED FIBROUS-ROOTED BEGONIAS.—*R. F. S.* There are no double-flowered, fibrous-rooted Begonias, such as are found in the tuberous-rooted section, although certain varieties, such as Triumphe de Lorraine, are inclined to show petaloid stamens, which we may regard as the first stage of doubling.

REMEDIES FOR WIREWORMS.—*W. K.* Gas liquor consists of an impure solution of ammoniacal sulphides, and chemists are able to extract about fourteen ounces of sulphate of ammonia from a gallon. Amongst numerous experiments carried out in the laboratory and in the open, gas liquor is not once mentioned as an insecticide, so that it should only be used by way of experiment in killing wireworms. The liquor could be diluted with three or four times its bulk with water, and tried on a piece of ground. Six weeks should be allowed before anything is sown or planted there. A more certain remedy would be to bore holes in the soil, six inches deep, and one to every square yard; pour one-fourth-of-an-ounce of bisulphide of carbon into each hole and cover the latter immediately. It is a highly poisonous and inflammable substance, so that it should not be put too near the roots of plants, and no light should be brought near it. During May and June, the parents of the wireworms may be trapped by laying pieces of board or slate in various parts of the garden, putting little heaps of Clover, Lucerni or Sainfoin on the traps and covering each heap with a tile, board or slate. Examine the traps every morning, if possible, and look for long, narrow, brown or black beetles, and have them destroyed. Renew the Clover every ten days, and look for eggs on the lower boards. Traps of Potatos, Carrots or Beet may also be set among choice plants. Keep the ground clear of weeds, summer and winter, to prevent the mother beetles from laying their eggs there.

Communications Received.—H. E.—D. D. R.—E. C.—C. C. C.—W. G. C.—J. O. I.—G. C.—E. E. T.—M. C. R.—T. S.—A. T. H.—E. G.—R.—W. T.

MARKETS.

COVENT GARDEN, Tuesday, January 31st, 1928.

Plants in Pots, etc.: Average Wholesale Prices.

(All 48's except where otherwise stated).

	s. d. s. d.
Adiantum cuneatum per doz. ...	12 0-15 0
—elegans ...	12 0-15 0
Aralia Sieboldii	9 0-10 0
Araucarias, per doz.... ...	30 0-40 0
Asparagus plumosus ...	12 0-18 0
—Sprengeri ...	12 0-18 0
Aspidistra, green	16 0-60 0
Asplenium, doz.	12 0-18 0
—32's	24 0-30 0
—nidus ...	12 0-15 0
Cacti, per tray 12's, 15's ...	5 0—7 0
Crotons, doz. ...	30 0-45 0
Crytomiums ...	10 0-25 0
Cyclamens, 48's, per doz. ...	27 0-36 0
Daffodils, 48's, per doz. ...	12 0-15 0
Erica gracilis, 48's, per doz.	24 0-30 0
— — 60's, doz.	12 0-15 0

	s. d. s. d.
Erica, mixed, 72's, per doz.	8 0—9 0
—hyemalis, 48's, per doz. ...	18 0-24 0
—nivalis, 48's, per doz. ...	21 0-27 0
— — 60's, doz.	12 0-15 0
Hyacinths, 3's, per doz. ...	21 0-30 0
—60's, per doz.	9 0-10 0
Marguerites, 48's, per doz. ...	18 0-21 0
Nephrolepis in variety ...	12 0-18 0
—32's	24 0-36 0
Palms, Kentia	30 0-48 0
—60's	15 0-18 0
Pteris in variety	10 0-15 0
—large, 60's ...	5 0—6 0
—small ...	4 0—5 0
—72's, per tray of 15's ...	2 6—3 0

Cut Flowers, etc.: Average Wholesale Prices.

	s. d. s. d.
Adiantum decorum. doz. bun.	21 0-24 0
—cuneatum, per doz. bun. ...	12 0-15 0
Anemones, St. Brigid, per doz. bun. ...	6 0—9 0
—fulgens, per doz.	7 0—8 0
Arums (Richardia), per doz. blooms ...	8 0-10 0
Asparagus plumosus per bun. long trails ...	2 6—3 6
—med. sprays	2 0—2 6
short „ ...	— 1 0
—Sprengeri, bun. long sprays	2 6—3 0
med. „ ...	1 0—1 6
short, „ ...	0 6—1 9
Camellias, 12's or 18's, per box	3 6—4 0
Carnations, per doz. blooms	3 0—5 0
Chrysanthemums, per doz. blooms—	
—white ...	5 0—8 0
—yellow ...	5 0—8 0
—bronze ...	8 0—9 0
—spray, pink, per doz. bun.	— 42 0
—spray, white, per doz. bun.	42 0-48 0
Croton leaves, per doz. ...	1 9—2 6
Daffodils, per doz. bun.—	
—Golden Spur	9 0-12 0
—Princeps ...	8 0—9 0
—Sir Watkin ...	10 0-12 0
—King Alfred	36 0-42 0
—Victoria ...	12 0-15 0
Fern, French, per doz. bun.	10 0-12 0
Forget-me-not, per doz. bun.	12 0-15 0
Freesia, white, special, per doz. bun. ...	12 0-15 0
—ordinary ...	3 6—4 0
Heather, white, per doz. bun.	— 12 0
Hyacinths, Roman, per doz. bun.	12 0-15 0
—large white, per doz. spikes	3 0—4 0
Lilac, white, per doz. sprays...	6 0—9 0
—mauve, per doz. spikes ...	6 0—9 0
— — speciosum rubrum, long, per bun. ...	5 0—6 0
Lilium rubrum, short, per doz.	3 0—3 6
—longiflorum, long, per bun.	7 6—8 0
— —short, doz. blooms ...	7 6—8 0

	s. d. s. d.
Lily-of-the-Valley, per doz. bun.	24 0-30 0
Marigolds, per doz. bun. ...	3 0—4 0
Myrtle, green, per doz. bun.	1 6—2 0
Narcissus Soleil d'Or, per doz. bun.	5 0—7 0
—Grand Primo, per doz. bun.	4 0—5 0
—Paper White, per doz. bun.	5 0—6 0
Orchids, per doz.	
—Cattleyas ...	21 0-30 0
—Cypripediums	8 0-10 0
Primroses, per doz. bun. ...	5 0—6 0
Roses, per doz. blooms—	
—Madame Butterfly ...	12 0-15 0
Smilax, per doz. trails ...	3 0—4 0
Snowdrops, per doz. bun. ...	2 6—4 0
Tulips, per doz. bun.—	
—single, white	15 0-18 0
— — yellow ...	24 0-30 0
— — red ...	18 0-24 0
— — pink ...	24 0-30 0
— — terra cotta	18 0-24 0
— — mauve	15 0-21 0
—double varieties	24 0-36 0
—Darwins, Pink	48 0-60 0
— — Red ...	48 0-60 0
Violets, per doz. bun.	4 0—6 0
French flowers—	
—Anemone. De Caen, doz. bun.	15 0-18 0
— blue, per doz. bun.	7 0—8 0
—double pink, per doz. bun.	5 0—6 0
—Acacia (Mimosa), per doz. bun.	12 0-15 0
—Marigolds, per doz. bun. ...	4 6—5 0
—Narcissus, Paper White, per doz. bun.	3 0—3 6
—Gloriosa, per doz. bun. ...	3 6—4 0
—Soleil d'Or, per doz. bun.	2 6—3 6
—Ranunculus, Barbaroux, per doz. bun. ...	7 0—8 0
—Carmine, per doz. bun. ...	5 0—6 0
—Romano, per doz. bun. ...	12 0-15 0
—Violets, Parma, double, per bun.	3 6—4 0
— —single, doz. bun.	2 6—3 6

REMARKS.—Practically all lines in the cut-flower department have been on the increase, both from home-growers and the Channel Islands, and prices were down accordingly. Chrysanthemums are becoming scarce, and prices are firmer. William Copland Tulips, which realised very low prices last week owing to very heavy supplies, were a better line this morning. Single Daffodils from home-growers realised better prices, and additional sorts are now on the market, viz., Princeps, Victoria, Sir Watkin and King Alfred. Narcissus Pheasant Eye (Ornatus) is much improved in quality, and prices are on the down grade. Amongst Tulips, red and pink Darwins are the newest arrivals, comprising the varieties William Pitt and Le Notre. A few Primroses were on sale to-day. Snowdrops are more than sufficient for the present requirements. Madame Butterfly is the best variety of Rose on offer, and flowers are very limited in quantity. Wallflowers from Cornwall, St. Brigid Anemones and A. fulgens are now coming to hand in better condition, while Iris tingitana is very fine in quality. Carnations, Liliums, Freesias, etc., show little change from last week's quotations.

Vegetables: Average Wholesale Prices.

	s. d. s. d.
Asparagus, Devon ...	8 0-10 0
—Lauras ...	15 0-20 0
—Giant ...	— 50 0
—Paris Green	8 0-10 0
—Sprue ...	2 0—2 6
—" National "	15 0-16 0
Beans, Madeira, per box ...	3 0—8 0
—Guernsey, finest, per lb.	8 0-10 0
—ordinary ...	2 6—4 0
Beets	5 0—6 0
Brussels Sprouts ½-bag ...	3 0—5 0
Cabbage, St. Malo ...	4 0—6 0
Carrots ...	6 0—7 0
Cauliflower, per crate ...	5 0-10 0
Celery (washed), per doz. fans	18 0-36 0
Cucumbers, doz.	12 0-18 0
Endive, Cornish	1 6—2 0
—Batavian, per doz.	2 0—3 0

	s. d. s. d.
Leeks, per doz.	2 0—3 0
Lettuce, French, round, per doz.	1 6—3 0
Mint, forced, per doz. bun.	4 0—8 0
Mushrooms—	
—Cups ...	2 0—3 0
—Broilers ...	1 6—1 9
Onions—	
—Dutch ...	7 6—8 6
—Spanish ...	13 0-15 0
Parsnips, cwt.	4 0—5 0
Potatos—	
—English, cwt.	5 0—8 0
—Guernsey, new, per lb. ...	0 10-1 3
—Azores, case	10 0-25 0
Tomato, Canary Islands ...	18 0-22 6
Turnips, per cwt. ...	3 6—4 0

Fruit: Average Wholesale Prices.

	s. d. s. d.
Apples, English—	
—Newton Wonder	4 0—8 0
—Lane's Prince Albert ...	4 0—8 0
—Bramley's Seedling ...	6 0-12 0
—other cookers	3 0—6 0
Apples—	
—Newtowns ...	12 0-14 0
—Winesaps ...	11 0-12 6
—Oregon, Newtown Pippin	13 6-17 6
Apples, Nova Scotian—	
—Greenings ...	16 0-24 0
—Baldwin ...	20 0-26 0
—Stark... ...	18 0-24 0
—Russet ...	30 0-36 0
Bananas ...	17 0-27 0
Grape Fruit—	
—Blue Goose ...	— 30 0
—Jamaica ...	— 20 0
—Florida ...	21 0-30 0
Grapes, English—	
—Alicante, per lb.	1 6—2 6
—Colmar ...	2 0—4 0
Grapes. South African—	
—Black Prince, per 10 lb. box	6 0—7 0

	s. d. s. d.
Lemons, Messina and Palermo, per case ...	18 0-32 0
—boxes ...	10 0-12 6
Nectarines, South African, per box	6 0-12 0
Oranges, per case—	
—Valencia and Denia, per case	10 0-35 0
—Seville ...	16 0-22 0
—Jaffa	18 0-20 0
—Tangerines ...	1 0—2 2
Peaches, South African, tray	4 6-10 0
Pears—	
—Doyenné du Comice, per doz.	3 0—6 0
—Oregon Doyenné du Comice, ½ case	14 0-16 0
—Nelis ...	17 6-20 0
Pines, per case	20 0-23 0
Plums, South African—	
—Santa Rosa ...	5 0—9 0
—Wickson ...	5 0-10 0

REMARKS.—Conditions in the market remain good for the time of year. The weekly shipments of fruits from South Africa are increasing, and the fruits generally are in good condition, and consist mainly of Peaches, Nectarines, Plums, Pears and Grapes, all of which are selling moderately well. Apples are inclined to be a better trade, the quantities available not being quite so heavy. A sprinkling of first-grade home-grown Apples are selling well, but second and medium grades are going badly. There are ample supplies of Oranges on the market, and the prices are more or less stationary.

Forced Rhubarb is a short supply and is selling freely. There are rather better supplies of Tomatos from the Canary Islands and prices are lower. Hothouse Beans are scarce and costly and forced Potatos also are not plentiful. Mushrooms have come along rather heavily and quotations are easier.

There is a good demand for all French salads, and for the small quantities of good English Lettuces that have been marketed. Cauliflowers have been variable, both in quality and demand, with accompanying fluctuations in selling prices.

Green vegetables remain a steady market, but the Potato trade is not quite so firm.

GLASGOW.

The depressing weather of the past week had a restricting influence on business in the cut-flower market, and with one or two exceptions, prices continued to decline. Supplies of Tulips continued to arrive in quantity, and were disposed of at the following rates:—William Pitt, 1s. 3d. to 1s. 9d. for 6's; Peach Blossom, 1s. to 1s. 3d.; Van der Hoff, special, 1s. to 1s. 6d.; ordinary, 7d. to 1s.; La Reve, 6d. to 1s. 6d.; Tea Rose, 10d. to 1s. 3d.; Rose Tendre, 10d. to 1s. 2d.; Prince of Austria, Flamingo and Mon. Tresor, 8d. to 1s.; Couronne d'Or, 8d. to 10d.; and Murillo, 6d. to 10d. Daffodils were also cheap; King Alfred sold at 1s. 9d. to 2s. for 12's; Ornatus, 8d. to 10d.; Golden Spur, 6d. to 9d. Narcissi made 2s. to 3s. per dozen bunches. Roses were scarce and sold at 8s. to 10s. per dozen; Carnations of medium quality made 3s. to 4s.; Lilium longiflorum, 8s. per bunch; Lily-of-the-Valley, 1s. 9d. to 2s.; Mimosa, 3s. 6d. to 7s. per case; and Wallflowers, 2d. to 3d. per bunch.

Trading continued to be very quiet in the fruit market. Prices of Apples and Valencia Oranges remained unchanged, and shipments of Jaffa Oranges sold as follows:—144's, 14s. to 15s. 6d.; 180's, 17s. to 18s. 6d.; and 250's, 14s. 6d. to 16s. 6d. Jamaica Grape Fruit made 15s. per case, and Florida Grape Fruit, 23s. to 27s. Winter Nelis Pears, 28s; and Pineapples, 4s. to 4s. 6d. case. South African fruits in excellent condition arrived in increased quantities, and experienced a good demand at the end of the week, when Santa Rica Plums were worth 4s. to 6s. for single-layer boxes: double layers, 6s. to 7s.; Wickson, single layers, 5s. to 6s. 6d.; double layers, 7s. to 8s.; Garrota, single layers, 6s. 6d. to 7s. 7d.; double layers, 9s. to 10s.; Peaches, 4s. 6d. to 7s. 6d. per box; Nectarines, 3s. 6d. to 7s.; and Bon Chretien Pears, 6s. 6d. to 7s. 6d.

Vegetable supplies reflected a greater variety. Cucumbers sold well at 18s. per dozen; Cauliflowers, 4s. to 5s.; Lettuces, 3s.; Turnips, 1s. 3d. per bunch; Carrots, 3d. Syboes, 6d. to 7d.; Marrows, 1s. 3d. each; Seakale, 3s. to 3s. 9d. per punnet; Mushrooms, 2s. 6d. per lb.; and Teneriffe Tomatos, 30s. to 34s. per bundle.

THE LATEST TRADE MARKS.

THIS list of Trade Marks, of interest to readers, has been selected from the Official Trade Marks Journal, and is published by permission of the Controller of H.M. Stationery Office.

ELDORADO.

484,535.—Fresh fruits, fresh Tomatos and fresh vegetables for food.—The Union Cold Storage Company, Limited, 13 to 16, West Smithfield, London, E.C. 1. January 18.

NITROPOT.

485,215.—Word "Nitropot" in a rectangle for fertilisers.—Renny Forbes and Company, Limited, Ealing Road, Alperton, Middlesex. January 11.

DAVIAL.

483,876.—Fruit and vegetables (for food).—Allsop and Davis (Farm Produce), Limited, Kirton, near Boston, Lincolnshire. January 11.

TRIOPHOS.

485,485.—Chemical substances used for agricultural and horticultural purposes.—Diamond Fertiliser and Chemical Co., Limited, County Insurance Buildings, Museum Street, York. December 28.

GARDENING APPOINTMENTS.

Mr. C. J. White, for eight years gardener to Lady GORDON, Ard Na Sidhe, Caragh Lake, Co. Kerry, as gardener to Major TRYON, The Manor House, Great Durnford, Salisbury.

Mr. A. T. Harrison, for many years gardener to the MARQUIS OF AILSA, Culzean Castle, Maybole, Ayrshire, has been appointed gardener at the TRAINING CENTRE FOR TEACHERS, Jordanhill, Glasgow, and will take up his new duties at the end of February.

CATALOGUES RECEIVED.

T. BATH AND CO., LTD., Savoy Street, W.C.2.—Sundries.
C. L. CURTIS, Anchor Street, Chatteris, Cambridge.—Seeds.
R. H. BATH, LTD., Floral Farms, Wisbech.—Seeds.
J. FISON AND CO., LTD., Ipswich.—Fertilisers.
BARR AND SONS, 11, King Street, Covent Garden, W.C.2.—Bulbs and Tubers.

Foreign.

MILLET ET FILS, Bourg-la-Reine, Seine, France.—Irises and new Paeonies.
HILL FLORAL PRODUCTS CO., Richmond, Indiana.—Roses, Carnations, etc.
PETER HENDERSON AND CO., 35, Cortlandt Street, New York.—Seeds.

SCHEDULE RECEIVED.

SCOTTISH NATIONAL SWEET PEA, ROSE AND CARNATION SOCIETY.—Exhibition to be held in the Kelvin Hall, Glasgow, on Wednesday and Thursday, August 1 and 2.—Secretary, Mr. J. Smellie, Westwood Cottage, Helensburgh.

THE Gardeners' Chronicle

No. 2146.—*SATURDAY, FEBRUARY* 11, 1928

CONTENTS.

Acacia Cunninghamii or A. podalyriaefolia 94
Agricultural Wages Board 95
Alpine garden—
  Celmisia spectabilis 98
  Tunica Saxifraga ... 98
Amaryllideae, bigeneric hybrids among the 99
Barton, Major W. ... 94
Blue Tits 107
Books, notice of—
  Flowering Plants of South Africa ... 93
Bulb garden—
  Galanthus byzantinus 101
  Ixiolirion Pallasii ... 101
  Lilium centifolium 101
Devil's Dyke, Brighton 94
Douglas Fir and other Conifers, a disease of the 105
Flowers by air from Italy 94
Fruit garden—
  Red Currants ... 106
"Gardeners' Chronicle" seventy-five years ago 95
Gardeners' Royal Benevolent Institution 93
Hardy flower border—
  Helleborus niger altifolius 98
  Phygelius capensis 98
Indoor plants—
  Browallia speciosa major 98
Light, the effect of, on plant growth ... 94
Moray Field Club ... 95
Obituary—
  Beissner, L. ... 110
  Holmes, W. A. ... 110
  Snell, W. 110
  Thorne, F. J. ... 110
Orchid notes and gleanings—
  Cypripedium seedlings 98
  Masdevallias ... 98
Park superintendent, the qualifications of an ideal 105
Plants in flower at La Mortola in January 104
Playing fields for Gatley 94
Rainfall at Normanton in 1927 95
Rhubarb and its wholesomeness 107
Rhubarb, forced ... 107
Seeds for abroad, British 94
Seeds, sowing small ... 107
Societies—
  British Florists' Federation 109
  Guildford and District Gardeners'... 109
  Kingston and Surbiton Chrysanthemum 110
  Manchester and North of England 108
  National Chrysanthemum 108
  Salisbury and District Gardeners'... 108
Trees and shrubs—
  Lonicera fragrantissima 101
Vegetable garden—
  Maize 107
Ward's, Mr. F. Kingdon, ninth expedition in Asia ... 102
Week's work, the ... 96
Welsh garden, notes from a 103
Wireworm parasite, a 94

ILLUSTRATIONS.

Barton, Major W., portrait of 94
Browallia speciosa major... 97
Celmisia spectabilis 95
Crindonna memoria Corsii 99
Douglas Fir, disease of 105
Lilium centifolium at Hidcote Manor 101
Ward's, Mr. F. Kingdon, expedition; views on, 102, 103, 104

Average Mean Temperature for the ensuing week deduced from observations during the last fifty years at Greenwich, 39·1°.

Actual Temperature.—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London, Wednesday, February 8, 10 a.m. Bar. 30·5. Temp. 51°. Weather, Fine.

The Gardeners' Royal Benevolent Institution.

Nearly a quarter-of-a-century ago there was published "A Short Account of the Work of The Gardeners' Royal Benevolent Institution." This was really an admirable history of the Institution, and was as complete a record of its struggles and accomplishments as was possible. When the next history of "The Benevolent"—as this national Institution is affectionately known—comes to be written the historian, as then, will find that, broadly, there are three facts that demand the chiefest attention. These are (1) the wonderful approval and support that has been received from the greatest of all classes in the land; (2) the energy and self-sacrifice of its officials and committee of management; and (3) the apparent apathy generally of the class for whom the Institution exists. The two first are wholly admirable and a tribute to the generous kindness of all concerned. The third is to be deplored. The mention of those who have given yeoman service to the Gardeners' Royal Benevolent Institution during its eighty-nine years would make a long list of names famous in our history as being eminent in government, politics, art, science, literature and our own ancient and honourable craft of gardening. The Royal Family has, from the first, set the seal of its gracious approval on the charity. The King and the Queen are Patrons; the Prince of Wales has always been its President; other members of the Royal Family are and have been Vice-Presidents. In its earlier days, vigorous support was given by such great men as Lord John Russell, Charles Dickens, Douglas Jerrold, Mark Lemon, Sir Joseph Paxton, Dr. Lindley, Dr. Robert Hogg, George Glenny, the brothers Noble, William Townsend Aiton—a Director of Kew and one of the founders of the Royal Horticultural Society, who appears to have headed the now long list of those who "remembered" the Institution in their wills; James Veitch, John Lee, and many others whose names are now only memories, but the great good they did lives after them. Later, Mr. N. N. Sherwood and Sir Harry Veitch carried on the good work; the latter was the outstanding personality in the modern history of the Institution; his generosity and untiring interest in its work will never be forgotten. It is well to recall that this support from the great ones of the country has continued unabated and to-day a Sutton (Mr. Leonard) presides at the meetings of the Committee of Management, and a Sherwood (Mr. Edward) signs the cheques which carry such welcome assistance to the old and needy. The Committee is composed of eminent men in horticulture who give their time willingly for this good cause. The Institution has also been fortunate in its Secretary, Mr. George J. Ingram, who allies with a sympathetic nature sound judgment in assessing the claims of candidates, and who was elected recently for the thirty-seventh time. The founders of the Institution must have experienced many anxious moments in its early days. Now, when the proceeds of an Annual Festival Dinner run into four figures, and over £235,000 have been distributed by the charity, and at the last Annual General Meeting twenty-five candidates were elected to its benefits, it seems strange to read that at the first Annual Meeting it was announced that £74 8s. 7d. was available for pensions! This seems to have been the capital sum with which the management proposed to commence operations, and in May, 1840, the first pensioner, John Standon, was elected by resolution. There were two other candidates, but their records were not in order. A year later two more pensioners were added. But the promoters never faltered, and, secure in their confidence of the need for the charity and that their appeals would meet with due support, they persevered, with the result that this premier national horticultural charity has smoothed and cheered the declining days of many thousands from the ranks of gardeners and others in allied callings, and their widows. We look back with great pleasure and justifiable pride to the fact that this journal has always whole-heartedly supported the Institution, and urged its claims in these pages. The "history" which we have mentioned records that at the second Annual Meeting the subscription list was headed by *The Gardeners' Chronicle*. But, while the Institution has been supported freely by garden owners, the trade and others, gardeners themselves have, as a class, failed in their duty to themselves, and to their fellow craftsmen. This neglect of their Benevolent Institution by gardeners is no new thing. So long ago as in 1862, Dr. Lindley, one of the founders of this Journal, as well of the Institution which he "earnestly supported by pen, purse and precept," wrote "Out of some ten thousand parishes, alone, there must be, one with another, a head gardener. The whole number of subscribers is only 294, of whom the immediate neighbourhood of London furnishes 67. This is difficult to understand as the Institution offers to aged and infirm gardeners the advantage of a pension in old age, and to the widow a succession to it." This reproach is, unfortunately, more true to-day than when it was written. It is difficult to understand why gardeners as a class, do not support their charities. One would have thought that self-preservation—which is said to be the first law of nature—would have compelled them to do so, for one never knows what his own need may be. It is on record that one of the founders of the Institution, who had every reason to consider himself beyond the possible need of its future assistance, and worked only for the good of his fellow men, himself "fell on evil days," and was glad to be a pensioner. Continuing its tradition, *The Gardeners' Chronicle* appeals to all gardeners and garden lovers who do not support the Institution to send a subscription and so help to increase its usefulness. The address is 92, Victoria Street, London, S.W.1. Please do it now. There is a long waiting list of gardeners and widows who urgently need help.

Construction and Design of Public Parks.—A meeting of the Association of Parks and Botanic Gardens Superintendents will be held in the Lecture Room of the Royal Horticultural Society's Hall, Vincent Square, Westminster, on Tuesday, February 14, when an address will be given by Mr. A. Blackburn, Superintendent of the Blackpool Parks, and General Secretary of the Association, on "Public Parks Construction and Design." The chair will be taken at 7 p.m. by Mr. A. J. Ashmore. Park Superintendents, Curators of Botanic Gardens and their assistants are invited to attend, and to take part in the discussion.

The "Seven Sisters" of Holloway.—The well-known Seven Sisters-road at Holloway obtains its name from seven old Elm trees which grew on Page Green, Tottenham, by its northern limit. The original trees have long since disappeared and forty-two years ago seven sisters, named Hibbert, planted seven young Elm trees there, to continue the association. Three of these trees have gone the way of all trees, but recently five of the sisters re-visited Page Green and made good the deficiency.

Flowering Plants of South Africa.—No. 27 of Vol. 7 of *The Flowering Plants of South Africa* contains illustrations and descriptions of Delosperma tradescantioides, Vanzijlia annulata, Mesembryanthemum binum, Peersia macradenia, Stomatium pyrodorum, Echinus apiculatus, Faucaria tigrina, Argyroderma crateriforme, Punctillaria Roodiae, and Erepsia viridis. Delosperma tradescantioides, t. 261, is a rare species, apparently confined to the eastern portion of South Africa. It is grown, and flourishes freely, on rock-work in the Municipal Gardens, Cape Town. In the illustration, the flowers are deep magenta in colour, although according to the various collectors they may be white, buff, amber, mauve, or magenta. Vanzijlia annulata, t. 262, is apparently a misnomer, as the correct name of this plant is Mesembryanthemum annulatum, Berger, which is identical with M. angustipetalum, L. Bolus. It is a trailing plant with two forms of leaves, those of one type being shorter and thicker than those of the other. The solitary flowers are white or pale rose. Mesembryanthemum binum, t. 263, was previously and inaccurately published as a variety of M. apiculatum; there seems to have been some considerable confusion as to its identity. It is a low-growing herb with velvety-green leaves and solitary, bright, rose-coloured flowers. Peersia macradenia, t. 264, is another plant closely allied to the Mesembryanthemums, and one of those which open towards the evening and remain expanded and fragrant into the night. Stomatium pyrodorum, t. 265, is afforded two illustrations, the first depicting the natural plant, and the other that of a plant that had been under cultivation for two years; the change in the colouration of the foliage is somewhat remarkable. The blossoms of this plant possess the scent of Pear blossom, a character from which the specific name has been derived. Echinus apiculatus, t. 266, is described as an erect shrublet, up to twenty centimetres in height, with closely-set pairs of hairy, flat or convex, spine-tipped leaves, and solitary rose-pink flowers. Faucaria tigrina, t. 267, is quite a well-known species, introduced to England in 1790 by Masson. Argyroderma crateriforme, t. 268, is an extremely rare plant, having apparently been collected but once. This species, together with the other members of the genus, was recently described in *The Gardeners' Chronicle*, Vol. 79, p. 268. Punctillaria Roodiae, t. 269, has also been described in *The Gardeners' Chronicle*, Vol. 80, p. 229. Erepsia viridis, t. 270, was introduced to this country in 1791 by Masson, and described by Haworth in 1795. It is described as a rigid, entirely glabrous shrublet, with ascending or erect branches, and solitary, dull rose-purple or rose-coloured flowers.

Royal Gardeners' Orphan Fund Festival Dinner.—We are pleased to learn that Gerald W. E. Loder, Esq., of Wakehurst Place, Ardingly, Sussex, has consented to preside at the Annual Festival Dinner of the Royal Gardeners' Orphan Fund at the Hotel Victoria, London, on Wednesday, May 16, next. As is known generally, Mr. Gerald Loder is a keen amateur gardener and a member of the Council of the Royal Horticultural Society. We would remind readers that the Annual General Meeting of subscribers to the Fund is to be held at "Simpson's," Strand, London, next Wednesday, commencing at 3 p.m.

Legacies to Gardeners.—The late Mr. Alfred Fletcher Blades, of Wraylands, Reigate, who died on September 27, 1927, bequeathed £250 to his gardener, Mr. Frank Cordell.—The late Mr. Herbert Cecil Lanbury, of Lichfield, Bexhill-on-Sea, who died on November 28 last, left £200 to his late gardener, Mr. John Bristow.—The late Mr. Henry Joslin, of Gaynes Park, Upminster, bequeathed £100 to his head gardener, Mr. Hills.

Barcelona Exhibition.—The town of Barcelona, in Spain, is organising a great International Universal Exhibition, to be opened on April 1, 1929. All countries of the world are to be invited to participate, except the republics of South and Central America, which are to participate in the Seville Exhibition.

Ghent Floralies.—The Comte de Kerchove de Denterghem, the Governor of East Flanders and President of the Ghent Royal Agricultural and Botanical Society, with the Countess, is giving a ball during the week of the Floralies in the rooms of the Palais des Fêtes, the date fixed for this event being April 25, 1928. Incidentally, it may be mentioned that the Comte de Kerchove has just received the distinction of being made a Minister Plenipotentiary.

Flowers by Air from Italy.—A *Central News* message, dated January 31, states that the horticulturists of the Italian Riviera have decided, owing to the slowness and difficulties of transport by railway, to send their flowers by air to the European markets. Arrangements are being made with the air-line companies to keep the flowers fresh during their journey.

British Seeds for Abroad.—Special attention is being paid at this year's British Industries Fair to those products which have serious potential export value, and the Empire Marketing Board is therefore arranging a special display of pedigree seeds, nursery plants and bulbs. As is well-known, Great Britain has for centuries had a very large export trade in garden seeds and bulbs, and many of the beautiful gardens in the Dominions and Colonies, to say nothing of those of America, have been furnished from seeds either taken out by settlers, or supplied from this country. This is a branch of our export trade which could certainly be developed, and the Empire Marketing Board proposes to make a very complete exhibit of seeds and bulbs of plants which are suitable for foreign climates.

Window-Boxes for Cambridge.—We are interested and pleased to note that amongst the bequests of the late Master of Christ's College, Cambridge, was a legacy sufficient to provide summer window-boxes for the windows of the Lodge which overlook the First Court.

Major William Barton.—During his recent visit to this country, Major William Barton, R.M.D. and I., Royal Oak, British Columbia, and his wife, made many friends, especially among Sweet Pea enthusiasts. Major Barton was born in England, but during the war he served in France in the Canadian Forces. Soon after the cessation of hostilities he commenced seed-growing at Royal Oak, specialising in Sweet Peas. Mrs. Barton shares her husband's enthusiasm for his work, and already they have a reputation for the quality of their seeds. Major Barton is a Vice-President of the National Sweet Pea Society and is keenly interested in all British-raised varieties of Sweet Peas. Like so many Canadian business men, he believes in the fullest possible facilities for business between all parts of the British Empire; he has also interested himself in the effort to obtain better business postal regulations between Canada and other parts of the Empire. His faith in a great future for Canada is unbounded.

MAJOR W. BARTON.

American Iris Society.—It is possible that certain lovers of Irises are desirous of becoming members of the American Iris Society, but are deterred by the fact that the dues are payable in dollars, which necessitates, in some cases, obtaining a draft on New York, or an International Money Order. Arrangements have therefore been made between the two Iris Societies—British and American—whereby each Society will enrol members for the other, and collect the respective subscriptions, in England in sterling, and in America in dollars. The sum of 13s. per annum paid to the Hon. Treasurer, Major Churcher, Beckworth, Lindfield, Sussex, will secure membership of the American Iris Society. The subscription falls due on January 1 of each year.

Red and White Roses for the Inner Temple Gardens.—The Red Rose of Lancaster and the White Rose of York, associated so intimately during the Wars of the Roses, are to find a place in the new scheme of gardening at the Inner Temple Gardens. Last week Sir Francis Taylor, the Master of the Garden, with due ceremony, planted the first Rose bush. In view of the Duke of York being a Bencher of the Inn, this was a white Rose, and we understand that the red Roses will follow.

A Wireworm Parasite.—In the current issue of the *Naturalist*, Mr. G. C. Johnson, The University, Leeds, records the finding of a parasite attacking wireworms, Agriotes sp., at Selby, Yorkshire, on July 9, 1927. Two dead Agriotes larvae were found, with the pupa stage of a parasite protruding through the skins. The parasites emerged on July 13, two males and seven females. Dr. J. Waterston, Natural History Section, British Museum, identified the specimens as Paracodrus apterogynus, Hal. P. apterogynus had previously been sent to Dr. Waterston by Mr. A. W. Rymer Roberts in 1923, who had bred the specimens from Agriotes obscurus.

Devil's Dyke, Brighton.—The Sussex beauty spot known as Devil's Dyke, has been purchased anonymously, and it is understood, will be offered to the Brighton Corporation, at purchase price, for retention as an open space.

Acacia Cunninghamii or A. podalyriaefolia.—Mr. J. F. Bailey, Director of the Botanic Garden, Adelaide, writes: "In the last number of your publication received (issue of November 26, 1927), there is on page 425, an illustration depicting an Acacia, and attached to it is the name Acacia Cunninghamii. This is an error, as that species has long, falcate leaves, and the flowers are in spikes—see Maiden's *Forest Flora*, Vol. IV, p. 91. The figure in the above-mentioned issue evidently represents the Queensland Silver Wattle, Acacia podalyriaefolia, one of the earliest to come into flower, it being in all its glory in May and June, whereas other cultivated species generally flower between July and December. With best wishes for the continued success of your highly esteemed publication." The illustration referred to by Mr. Bailey represents a flowering branch exhibited by Mr. Lionel de Rothschild on November 15 last, when the Royal Horticultural Society's Floral Committee granted it an Award of Merit under the name of Acacia Cunninghamii.

Playing Fields for Gatley.—Mr. William Scholes, of Rose Hill, Gatley, Cheshire, who left £21,043, provided that the residue of his property should be used for the purchase of suitable land at Gatley for recreation grounds.

Effect of Light on Plant Growth.—Representatives of the four Scottish Universities met in conference in Aberdeen University on Saturday, January 28, under the auspices of the Aberdeen University Scientific Association. Mr. John M. Dodds, Aberdeen, presided, and prominent parts in the addresses and discussions were taken by Professor J. Arthur Thomson, Aberdeen, and other Scottish scientists. Much interest was aroused by visits to the forestry and botanical departments of the University. An interesting feature of the proceedings was an address by Mr. George Redington, Aberdeen, on "The Effect of Light on Plant Growth." Mr. Reddington contended that while light was essential to growth, there was danger in unduly prolonged exposure to light, as this might prevent the plant from obtaining the necessary normal amount of nightly rest. It was during the nightly rest that the protoplasm was irrigated by the nutritive substances necessary to the life of the plant. The upward tendency of sap in a plant was a process which went on in light and ceased in darkness. As to the effect of increasing or curtailing the light, no hard and fast rule could be laid down with regard to any species without actually trying it. The result of experimenting upon certain species was that lengthening the period of light by a few hours daily, by artificial means, brought the plant earlier to the flowering and fruiting stage than was the case under normal conditions, and shortening the period retarded the plant's coming to maturity. In these experiments, sunlight had to be entirely excluded, because to supplement sunlight by artificial light would be to introduce a varied factor. As a rule, plants grown in intermittent light were taller and branched more than those grown in continuous light, although certain plants—among them Hemp, Vetches and Geraniums—grew better in continuous light. In continuous light the leaves soon reached their maximum size and then withered rapidly.

Agricultural Wages Board.—The Minister of Agriculture and Fisheries has appointed the Right Honourable the Viscount Ullswater, G.C.B., to be Chairman of the Agricultural Wages Board in succession to the late Lord Kenyon.

Moray Field Club: Presentations to Retiring Secretary.—Mr. J. J. Burgess, Headmaster of Dyke Public School, and for twenty-three years Secretary of the Moray Field Club, is retiring under the age limit, and intends taking up his permanent residence in Fifeshire. To mark the occasion, the members of the Field Club met Mr. Burgess in the Elgin Museum on January 28, and presented him with a number of parting gifts. These consisted of a Wands microscope, a pair of prism binoculars, and several valuable works on botany and entomology. The Rev. George Birnie, Speymouth Parish Church, President of the Club, in making the presentations, declared it was Mr. Burgess's dogged perseverance and his unquenchable enthusiasm that had piloted their Club through its early vicissitudes, and it must be a satisfaction to him to know that he was leaving the Club in such a flourishing condition. But it would never be quite like its previous self without Mr. Burgess, whose unique knowledge of the botany of Morayland especially was such a valuable asset during the summer excursions. They wished Mr. and Mrs. Burgess a long and happy life in their new home. Mr. Burgess feelingly replied, and in the course of his remarks reminded his hearers that the first Field Club was formed in Morayshire so long ago as 1819. He passed in review a number of the stalwarts who had done so much in the past for scientific investigation in the county, and concluded by warmly thanking the members for their greatly-prized gifts. Representatives from kindred societies were also present, and these paid high tributes to the fine work accomplished by Mr. Burgess. The President, at the close, suggested that Mr. Burgess might, in the leisure afforded by his retirement, collate and summarise the records of the Club with a view to the future publication of a "Flora of Moray." The suggestion was heartily endorsed, and Mr. Burgess agreed to undertake the task.

Horticultural Exhibition at Nürnberg.—The Nürnberg (Germany) Horticultural Society is projecting a great flower show and exhibition, to be held in the middle of July, 1928. The venue of the show will be the large Festival Hall in the Luitpoldhain, with the surrounding garden and grounds.

Rainfall at Normanton, Yorks., 1927.—At Haw Hill Public Park, Normanton, the total rainfall for 1927 was 29·48 inches. January, 1·40 inch; February, ·71 inch; March, 1·54 inch; April, 2·58 inches; May, 1·58 inch; June, 2·42 inches; July, 3·06 inches; August, 5·32 inches; September, 3·31 inches; October, 2·03 inches; November, 2·85 inches, and December, 2·18 inches. The days on which most rain was recorded were August 9, 1·48 inch, and August 19, 1·53 inch, for the twenty-four hours ending 9 a.m. on those days. The highest barometric reading for the year was on December 28, *i.e.*, 30·20, and the lowest on December 22, 28·44.

Appointments for the Ensuing Week.—Monday, February 13: Derbyshire Horticultural Association's meeting; United Horticultural Benefit and Provident Society's meeting; Burnley Horticultural Society's meeting; Harrogate Horticultural Association's meeting. Tuesday, February 14: Royal Horticultural Society's Committees meet and Annual Meeting; Dundee Horticultural Society's lecture. Wednesday, February 15: Royal Gardeners' Orphan Fund Annual Meeting and Election at Simpson's Restaurant, Strand; Ipswich Gardeners' Association's lecture. Thursday, February 16: London Gardens Guild Lecture; Linnean Society's meeting.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Horticultural Society's Garden, Turnham Green.*—Two objects of by far the greatest interest here at present are the glorious Laelia superbiens in the curvilinear stove and the grand example of the showy Dendrobe (D. speciosum), in the house which was once a Pine-stove, but which is now converted into an Orchid-house. The Laelia is in full blossom, its noble bunches of charming flowers set on the ends of six long flower spikes producing an effect at once striking and magnificent. This is doubtless the finest plant of the kind in Europe; it was large when it was imported, but it has increased very much in bulk every year since, and now it is, indeed, a truly splendid specimen. This species has been considered by some to be a shy bloomer; but it has not proved so here, where it annually furnishes a display with which what in the way of Orchids can compare? Less showy, perhaps, but little less effective, is the fine Dendrobe above alluded to. It has twenty spikes of pale yellow blossoms, which a few days more will bring into such perfection as must excite the admiration of all who have the good fortune to see them. This, too, is one of the finest plants in the country. It was long before it could be brought into a flowering state, but ever since that condition has been induced it has seldom failed to reward the care bestowed upon it by a plentiful crop of blossoms every season. These two plants are themselves ample recompense for a journey of many miles to see them, but there are others also well worth inspection. The large Luculia gratissima, planted out in the bed of the great conservatory, is nearly in full flower; the numerous clusters of blossoms, notwithstanding the very little sunshine we have had, being well-coloured and deliciously sweet-scented. At one time it was thought that this plant was only cultivable in a stove, or an intermediate house, but the fine example in question proves that it will succeed perfectly well in the properly-made bed of a cold conservatory. Acacia Riceana, in the shape of a graceful tree, is beautifully in blossom here, and others of the fine leguminous plants which this house contains will also soon be in bloom. In about a month, too, the Camellias promise to be in fine condition, the flower buds being abundant and prominent. Cestrum aurantiacum having finished flowering, the trees have been pruned "hard in"; and managed in this way, both it, Brugmansia sanguinea, and things of that kind are kept within bounds, and made to bloom two or three times a year. *Gard. Chron., February* 5, 1853.

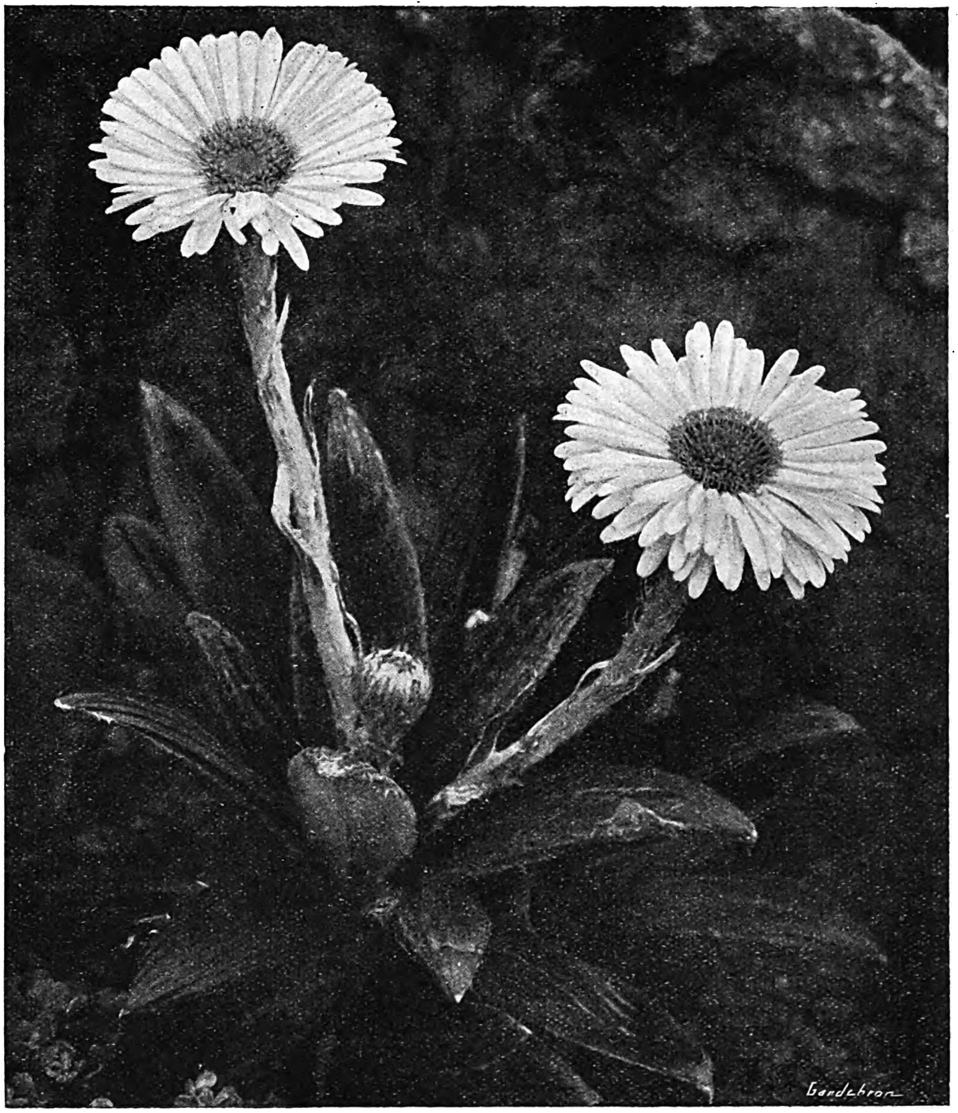

FIG. 51.—CELMISIA SPECTABILIS.
(see p. 98).

Publications Received.—*Climate and Commerce*, compiled by the Research Department, Dorland Advertising Ltd., 14, Regent Street, S.W.1. *Wild Flowers of Kashmir*, by B. O. Coventry; Raithby, Lawrence and Co., Ltd., 231, Strand W.C.; price 16/-.

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven Moore, Manchester.

Cypripedium Fairreanum.—This beautiful, lime-loving species thrives in the intermediate house. Broken limestone may be mixed with the drainage material and a liberal quantity, mixed with good loam, should fill two-thirds of the pot, the remainder being filled with equal parts of A.1. fibre and Sphagnum-moss.

Calanthes.—Most of the deciduous Calanthes have passed the flowering stage, and should now be allowed to rest in a moderately cool and airy position. If space is restricted they may be turned out of the pots, the compost and some of the roots removed, and arranged in shallow boxes, with a little sand at the base; otherwise they may remain in the pots until ready for repotting. No water will be required, and the atmosphere should be kept fairly dry. Near large towns, it is advisable to retard the flowering period of Calanthes until January, if possible, to lessen the danger of damage by fog.

Cattleyas and Laelio-Cattleyas.—Several of the winter-flowering varieties possess a thick, fleshy sheath around the flower spike, where decay often commences during dull weather. Care should be taken when removing the sheath, and if decay is suspected, the affected part may be dusted with powdered charcoal, or sulphur. In smoky districts some of the Cattleyas have difficulty in pushing the buds through the sheath; they should be watched, and assistance given by opening the sheath at the top. Scale insects do considerable harm to these plants and should be removed so soon as they are detected.

Seedling Dendrobiums.—These are growing fast, and every encouragement should be given them in a light position, in the warmest house, where the surroundings are kept humid. Fresh roots will be showing as the new bulb develops, and any necessary potting may now be done, using small pots or pans; avoid overpotting and pot firmly. A suitable compost is equal parts of Osmunda fibre and Sphagnum-moss, cut moderately fine, and a sprinkling of crushed crocks. Very little water is needed until the roots are well through the compost. The pseudo-bulbs should be supported with neat stakes to assist the formation of the plants and to avoid root-disturbance when moving them.

THE KITCHEN GARDEN.

By Allan Falconer, Gardener to the Cheadle Royal Mental Hospital, Cheadle, Cheshire.

General.—Provision should be made for the necessary supply of Pea and Bean sticks; these may be prepared during bad weather. Broken boxes may be repaired and made ready for use. Various composts may be prepared, ready for the busy season of sowing and potting, and any deficiency of potting materials made good. Soil for filling holes bored for exhibition roots may be prepared now and allowed to dry a little; it expedites the work, and is an important operation where unkind soils for roots exist. Potato sets, so soon as received from the seedsman, should be set up in trays in a light place, to encourage sturdy growth.

Leeks.—As Leeks require a long season of growth, no time should be lost in sowing the seeds in gentle heat, in a fairly light compost, in well-drained boxes or pots, the latter being the best for exhibitors, sowing three or four seeds in sixty-sized pots and eventually thinning the seedlings to one. Sow thinly in the boxes, water, and place them in a temperature of 55°. So soon as the seedlings appear, place the receptacles in a position near the roof-glass to secure all the light possible. In a short time the seedlings will be ready to prick off either into pots or boxes, in a mixture of loam, leaf-mould, Mushroom-manure, and a good sprinkling of sand to make the whole porous. Grow them in the same temperature, and be careful about watering. Those required for exhibition, when sufficiently rooted, will need six-inch pots, using the mixture as advised for sowing, with the addition of some bone-meal, the whole being passed through a half-inch sieve. Keep them growing steadily, and towards the end of March gradually harden the plants and transfer them to cold frames. Plant them towards the end of April in well-prepared trenches. Good Leeks may also be raised by sowing seeds on a gentle hot-bed early in February, and when large enough, pricking out the seedlings into cold frames, two inches apart.

Carrots.—A small sowing of a stump-rooted variety may be made on a gentle hot-bed, preferably in a brick frame. If sown in rows six inches apart, Radishes can be sown between them to provide a useful catch crop of good quality.

Lettuces.—Those sown in the autumn, if transferred from the seed bed, will respond quickly to the conditions maintained by a gentle hot-bed, and be very useful at a time when salads are scarce. Small sowings of a quick-maturing variety should be made about every ten days, for pricking out into spare frames, or planting amongst Tomatos or other crops, as space becomes available. I find these catch crops very acceptable; being of good quality, they are much sought after where salads are required regularly.

Jerusalem Artichokes.—The best tubers of this vegetable should be lifted and stored in a clamp, saving those of seed size for planting when soil conditions are suitable in February.

FRUITS UNDER GLASS.

By T. Pateman, Gardener to Sir Charles Nall-Cain, Brocket Hall, Hertfordshire.

Fruit Trees in Pots.—Fruit trees that are growing in pots should be sprayed, and their receptacles made clean before bringing them into the cold orchard house. The pots may be stood on slates or boards to prevent worms working up into them. It is usual to pot these trees during the autumn, but if this work has been overlooked it is advisable to inspect the drainage material, and also to apply a light, rich top-dressing.

The Muscat Vinery.—Where it is required to have ripe Muscat Grapes by the end of July or the early part of August, the house may now be closed. Muscat vines are somewhat slow in starting into growth, and require a long season to ripen the fruits and impart to them that rich colour which delights the connoisseur. Assuming that the vines have enjoyed a period of rest, that the house in which they are grown has been thoroughly cleansed, and that the borders in which the vines are growing have been put in order—top-dressed and thoroughly watered—they may now be started into growth. Do not hurry them in the early stages, or the vines may break weakly and render the subsequent growths open to attack by red spider; the foliage of Muscat Grape vines is more tender than that of most varieties.

Extension of Vine Borders.—Should the borders need extending, as is often the case where new ones have recently been made, the work may be carried out immediately. The turves that form the wall to the border may be removed, then the drainage may be carefully laid for the proposed extension—two feet is usually sufficient to add at one time, but much will depend on the strength of the young vines. Where growth has been weak, and the roots have failed to spread freely, very little extension of the border is required. The drainage material may be covered with a thin layer of fresh turf, grass-side downwards, covering this with the new compost and building up the borders with small turves, four to five inches square. It will be found that the roots of the vines will penetrate more rapidly into small turves than into larger ones. The soil should be slightly on the dry side, so that it may be made firm.

Strawberries.—The Strawberries growing in pots under glass for early supplies will soon be in flower, and at this stage a drier atmosphere may be advantageous to the fertilising of the flowers and the setting of the fruits. Some growers favour the use of a feather brush to distribute the pollen, but my experience is that natural fertilisation gives the best results. As the plants pass out of flower, and if early fruits are desired, they may be subjected to a higher temperature, otherwise a moderate temperature will produce finer fruits and better flavour. Batches of plants may be introduced into warmth as required, to keep up a succession of fruits.

PLANTS UNDER GLASS.

By J. Coutts, Assistant Curator, Royal Gardens, Kew.

Calceolarias.—Plants of the herbaceous type that were raised from seeds sown last August, should now be ready for moving into larger pots. They require a light, rich compost, enriched with well-decayed manure. Calceolarias enjoy cool and moist atmospheric conditions. They should be grown in a frost-proof house, but high temperatures induced by artificial heat are not beneficial to them and merely encourage aphis attacks. The foregoing remarks apply also to the shrubby section of Calceolarias, which are represented by such well-known varieties as Clibrani, Banksii, Burbidgei and Allardii.

Sweet Peas.—Sweet Peas, if raised from seeds, sown last autumn, should now be ready for placing in their flowering pots, ten-inch pots being very suitable for this purpose. The compost should consist of good medium loam, to which a five-inch potful of bone-meal for every bushel of soil may be added, with enough clean, coarse sand to keep it open and porous; a dusting of lime should also be given. I do not advise the use of leaf-soil unless it is necessary to lighten a very heavy loam. Care must be exercised for some time when watering, until the plants have obtained a good hold of the fresh compost; each plant will require a slender cane for support, and cool, airy conditions should be provided.

Solanum Capsicastrum.—This is a popular and useful subject for general use during the winter months. A stock of plants may be raised from seeds or cuttings. Plants from seeds vary somewhat, therefore it is best to propagate by cuttings taken from a selected stock for they root readily in a warm case. The cultivation of this Solanum presents no difficulty as the plants grow freely in a greenhouse, or cold frame, during the summer months. If they are planted out-of-doors for the summer they may be lifted and potted towards the middle of September. To secure good specimens frequent stoppings of the growths in the younger stages is essential.

Freesias and Lachenalias.—These subjects, when they have finished flowering, should not be neglected if it is desired to grow them on for another season. They should be given a light position in a cool greenhouse, or even in a cold frame, and should be afforded every attention as regards feeding and watering to promote the formation of good bulbs and corms, gradually withholding the water as the foliage dies. These remarks apply to all bulbous plants of this character.

Gloxinias.—The Gloxinias that were started into growth early in the year are now ready for potting. Use a light compost, and water very carefully until the roots are growing freely. Gloxinias are erroneously regarded as only suitable for the stove; if grown under cool conditions, they are excellent subjects for the greenhouse. During the summer, they may be successfully grown in cold frames if the sun-heat is conserved by shutting them early. Seedlings, the result of last month's seed-sowing, may be pricked out into pots or pans of light, rich compost. Seeds may still be sown; the resulting plants, if well-grown, will afford a good display during the autumn.

Palms.—Large specimens established in pots or tubs generally benefit from a top-dressing applied at this time. With care, Palms will remain for many years in receptacles out of all proportion to the size of the plants, attention to watering and feeding keeping them in good health for many years. Pot young Palms, as they require it, keeping them in as small pots as possible; a few seeds of the common decorative species may be sown each year.

HARDY FRUIT GARDEN.

By T. E. Tomalin, Gardener to the Earl of Bessborough, Stansted Park, Emsworth, Sussex.

Peaches and Nectarines.—It is a good practice to allow the young growths of Peach and Nectarine trees to hang free of the walls during the winter months, to retard flowering. Any necessary pruning, however, must now be done. Remove so much of the wood which bore fruit last season as may be spared, although this is best done in the autumn, immediately each tree has been cleared of fruit; after pruning, the remaining shoots should be evenly disposed over the wall space at about six inches apart. Stout, tarred twine should be used for tying in the main branches, and strong raffia for the young wood. Care must be exercised when tying to allow room for the development of the branches during the growing season, as the ties will be concealed by the foliage, and much damage may be caused before it becomes apparent. If the trees are subject to attacks of leaf-curl (Exoascus deformans), they may be sprayed with Burgundy mixture before the flower buds show colour. If the soil of the border has become exhausted, it will be advisable to remove the surface material and add good loam, to which some mortar rubble, wood-ash and a sprinkling of bone-meal has been added. Borders which are in good condition may be given an application of bone-meal at the rate of three ounces to the square yard. This dressing may be lightly pricked in with a fork, but on no account should deep digging be practised near the roots of the fruit trees.

Raspberries.—New plantations of these fruits may now be made on ground that was well trenched in the autumn. The fibrous roots of Raspberries do not take kindly to stiff clay soil, and where such exists, some lighter compost should be used for covering the roots. Raspberries may be planted in lines six feet apart, the canes being set one foot apart in the rows. After planting, mulch with strawy manure, and cut the canes down to within six inches of the ground. Three excellent Raspberries are Pyne's Royal, Norwich Wonder and Lloyd George; while the yellow-fruited variety, Queen of England is very fine.

THE FLOWER GARDEN.

By J. G. Weston, Gardener to the Duke of Devonshire, Chatsworth, Bakewell, Derbyshire.

Specimen Shrubs and Trees.—No plants in gardens and pleasure grounds suffered more severely from neglect during the latter years of the war and for several years afterwards than did the shrubs and trees. As the specimen trees and shrubs are the most valuable possessions in many gardens, every opportunity should be taken during the winter, when ordinary ground work is often hindered by the weather, to go carefully through at least a portion of the shrubbery, and carry out the necessary work of pruning and thinning the various occupants. Such coarse-growing shrubs as Rhododendron ponticum, or the Common Laurel, that have been planted to screen undesirable objects, or as shelter belts, or for furnishing the space while the better-class specimens are attaining size, should be kept within proper limits; where they have outgrown their original position, they may be cut down to within a foot or two of the ground, or, if no longer required, taken out entirely.

Hybrid Rhododendrons.—These suffered badly through lack of attention, especially those grafted on stocks of the common R. ponticum. If not attended to with regard to the removal of all the young growths from the stock, the variety will soon be overwhelmed, and a bush of R. ponticum will result. To remove these shoots should be part of the routine work each season, and also to see that each specimen has sufficient room to develop and show its true beauty. Although it is perfectly correct to plant Rhododendrons fairly thickly to secure effect within a short period, it is important that timely thinning is conducted so that valuable plants may not be damaged.

The Pinetum.—In well-developed gardens there are usually choice specimen Conifers. It may be necessary to remove a worn-out tree, especially if it is preventing the development of another, but no tree should be destroyed without due consideration from every point of view. All dead or decaying branches should be removed as nothing is more unsightly in the gardens or pleasure grounds than dead branches in trees. The recent gales wrought havoc in many gardens, twisting and breaking whole branches from specimen trees. Damaged growths may be carefully removed to allow new ones to fill up the gaps so far as possible.

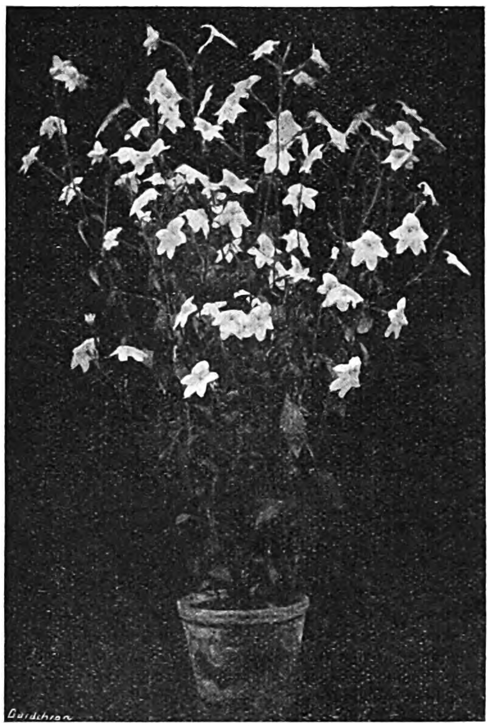

FIG. 52.—BROWALLIA SPECIOSA MAJOR.
(see p. 98.)

Ribes sanguineum.—Old clumps of this popular flowering shrub will repay a little attention. If worn-out branches are cut hard back to the main stems, new strong shoots will be made that will flower well during the following season, and the whole plant will show a marked improvement.

FOR NORTHERN GARDENERS.

By A. T. Harrison, Gardener to the Marquis of Ailsa, Culzean Castle, Maybole, Ayrshire.

Spraying Fruit Trees.—So soon as the pruning of fruit trees is completed, after this date, the first favourable opportunity should be taken to spray them. For this purpose many preparations are obtainable, and the newer tar-distillate sprays in one of their many forms may be used; it is claimed by the manufacturers that these preparations not only destroy any insects alive at the time of spraying, but, what is of much greater importance, also destroy the eggs that would naturally hatch out so soon as weather conditions are propitious. These preparations must be mixed in accordance with the directions given. Where possible, soft-water should be used to dilute them to the proper strength, as some of the hard spring-waters do not mix properly, and a scum is formed on the surface of the mixture, even while spraying operations are in progress. A calm day should, of necessity, be chosen, not only because the spray may then be more efficiently and economically applied, but also better directed and kept clear of the operator and his assistants. The spraying outfit should be overhauled in advance and any leaking joints or spent washers made good; the nozzles should be cleaned, so that when suitable weather conditions arrive no time may be lost. Where scab and other fungous diseases are in evidence, the fruit trees may be sprayed with a lime-sulphur mixture, but this operation may be delayed until so late a date as possible —just before the buds commence to move. This date varies with the different forms of fruit trees grown, and also depends to a great extent on the local conditions.

Malmaison and Border Carnations.—Plants of both these types of Carnations, that were raised from layers during last autumn, and have been kept in cool quarters in small pots during the winter, may now be potted into six-inch pots. Use a compost of good loam, wood-ash, lime-rubble and sand, with a sprinkling of soot, and a six-inch potful of an approved Carnation manure, such as Bentley's, to each barrow-load of compost. Border Carnations may be grown successfully in an absolutely cool house, and even Malmaisons. if not required at an early date, may be depended on to produce magnificent blooms during July and August under similar conditions. Older plants which flowered last year, if in good health, may also be repotted, using pots two sizes larger than those in which the plants are growing, and a similar compost to that given above. Firm potting is essential, and careful watering until the roots have permeated the new soil is, perhaps, one of the most important details in the successful culture of Carnations. Perpetual Carnations, which were inserted as cuttings early in January, should now be rooted sufficiently to enable them to be potted singly into thumb-pots; keep them in a similar temperature to that in which they have been growing, until they have recovered, when they may be removed to cooler quarters.

Begonias.—The small-flowered, fibrous-rooted types of Begonias are often used as bedding plants. They may be raised from seeds sown now in a moderate temperature of 60°. The tiny seeds must not be covered, but merely pressed down on the prepared surface and sprinkled with silver sand. Shade is most essential for Begonias in their young stages; darkened glass is, perhaps, better than paper or other coverings, as there is less chance of its being left off at a critical time. The seedlings may be pricked out so early as possible into boxes of good soil containing a fair proportion of leaf-mould and sand, for if they are left in the seed-pans any length of time they appear to cease growing, and delay or complete loss is the result. These remarks apply also to the tuberous-rooted Begonias that may also be sown now to supply stocks for future years, but one-year-old tubers are now obtainable in quantity, and these form a ready means of making good any losses incurred during the season.

Early Potatos.—It may be too early in most districts to plant the earliest Potatos; as a rule, by this date, many acres are planted on the Ayrshire coast farms, and where similar climatic conditions prevail, a start with the early varieties may now be made. The sets, previously sprouted, should be placed in a good light and the eyes reduced in number, so that at planting time only one main growth is left. The question of applying artificial manure to Potatos has been widely discussed in these pages recently, and without entering on a controversial subject, it may be stated as a fact that the early Potato growers in this district use heavy dressings of compounded Potato manures, sown in the drills at planting time.

HARDY FLOWER BORDER.

PHYGELIUS CAPENSIS.

Given a position at the base of a south or west wall, this delightful plant will form a shrub three to four feet high, but in less favoured situations it is herbaceous in character; grown as a shrub, the plant is exceedingly ornamental and a striking feature when suitably placed.

It thrives in a light, rich, loamy soil, and intensely dislikes a retentive root-run; the flowers are scarlet with some yellow in the interior, tubular in form, with the corolla about one-and-a-half inch long. The leaves are ovate or ovate-lanceolate, and two to three inches long; the rather thick branches are sub-tetragonal and smooth. Cuttings afford a ready means of propagation.

P. capensis, the Cape Figwort, was introduced from South Africa in 1855, and is figured in the *Bot. Mag.* (t. 4,881). *A. C.*

HELLEBORUS NIGER ALTIFOLIUS.

I have a colony of the beautiful Christmas Rose that is sometimes called Helleborus niger maximus, flowering in my garden at the present time, and I cannot forbear to write about its charms.

The large flowers are white, with a flush of rose in them that gives a very charming effect. The colony is growing in the slight shade afforded by a specimen of Prunus Pissardii, and this shelter from the sun seems to be beneficial to the plants during summer.

In common with the less ambitious type plant, Helleborus niger, this variety rejoices in a soil that is rich in humus, and it is impatient of root disturbance. Once a colony is established it should be left severely alone until there is clear evidence of constitutional decline, when it may be lifted and replanted during October. *G. H. Copley, N.D.H.*

ALPINE GARDEN.

CELMISIA SPECTABILIS.

Although Celmisias are among the most beautiful of New Zealand alpine plants, they are, alas! not easily or successfully managed by the majority of growers in this country. Our wet winters and lack of sunshine appear to be the chief causes that prevent success in their cultivation, and many means have been adopted to reduce the effects of the former difficulty. An alpine house is probably the best place for Celmisias as the protection thus afforded keeps the foliage dry.

Celmisia spectabilis (Fig. 51, p. 95) was discovered in Tonjariro in 1839; in the principal islands of New Zealand this species is found on most of the mountain ranges, and in the southern parts of the middle island it is found at elevations of 2,000 to 5,000 feet.

The flower heads may be so much as two inches wide, white, but occasionally tinged with lilac. The entire, leathery leaves are about six inches long, dark green in the upper surface, with a few silky hairs, the under-surface being covered with dense buff wool. The sheathing bases of the leaves, the stout scapes, the bracts and the involucre are all clothed with silky downy, white hairs, and this "downiness" is by no means the least attraction possesssd by C. spectabilis.

TUNICA SAXIFRAGA.

It is difficult to restrain one's enthusiasm with regard to Tunica Saxifraga. It has many claims upon us, and during the past mild autumn and early winter it proved delightful, and its tiny flowers continued to appear and remained in fairly good condition when almost everything else in the rock garden was devoid of bloom. These flowers, which last so long, are unspeakably precious. But it does not appeal on this ground alone, for it is a most delightful plant for many months in the year, generally presenting us with masses of its pleasing leaves trailing over the stones or making a welcome covering for the more level parts of the garden. Then, not satisfied with this, it covers itself with a profusion of little flowers reminding one of those of a small, single Pink, in some plants white, in others pale pink, and, in others, again, affording us even a little brighter hue.

It is a true perennial, and one of the alpines which continue from year to year in poor soil or rich, in sun or in shade, unaffected by changes of temperature or of rainfall, and immune against the attacks of most, if not all, our garden enemies. It withstands our winters although a native of the southern slopes of the Alps and southwards to the Mediterranean. In addition to all this, it grows freely from seeds. The best seedling forms may be propagated by cuttings, which are rooted easily in pots under glass, in sandy soil.

Tunica Saxifraga has a woody base, from which spring many rather trailing branches furnished with very numerous, small leaves, and adorned in due season with starry flowers of pearly-white, pale pink or deeper, though still delicate, pink. In rich soil it may make a mass a foot high, but in poor, stony compost it may be only three or four inches in height, so that, with some consideration, it may be utilised to fill several rôles in the rock garden. Neither poverty nor richness of soil will prevent its flowering freely, and it will bloom as satisfactorily perched on a stony, bare height as lower down in the more fertile soil, nourished by the moisture from above. A keen and unsparing critic of garden flowers has characterised T. Saxifraga as "precious." Precious, indeed, it is, and its behavour during the past season compels me to give it more than an ordinary meed of praise.

The double form is much appreciated by some, but is not one which appeals greatly to me, while some find it less permanent than the single form. I do not agree with this, however, as I consider it as enduring as the single forms. *S. A.*

ORCHID NOTES AND GLEANINGS.

MASDEVALLIAS.

Where a varied collection of these bright-flowered and interesting Orchids is grown there are generally some in flower at the present time. While many of the robust-growing Masdevallias flower during the summer months, and may be repotted during September, there are others that often flower and are much appreciated during the winter. Strong-growing kinds, such as M. coccinea, M. grandiflora Veitchiana, and the large, white-flowered M. tovarensis, may now need repotting. Specimen plants that have lost their leaves in the centre may be broken up, have the leafless rhizomes and dead roots removed, and each piece potted separately; or they may be arranged together, with some growing points towards the centre, to make compact specimens. Well-drained pots are the best receptacles for Masdevallias, and a compost of three-parts Osmunda fibre, one part Sphagnum-moss, and a sprinkling of broken charcoal, will give good results. Pot them moderately firmly, and keep the base of the plant just below the pot rim to allow ample room for water during the growing season.

The small-growing species and hybrids embrace many interesting Orchids, as M. Arminii, M. Estradae, M. Leda, M. melanopus, M. tridactylites, M. simula and the sensitive-flowered M. muscosa. These may be grown in small, well-drained pans and suspended from the roof; dryness at the root should be avoided during the growing period, and only a small quantity of compost is required by the members of this section.

The Chimaera section of Masdevallia that includes such interesting kinds as M. bella, M. Chestertoni and M. radiosa may be grown in Teak-wood baskets without any hard material for drainage. This will allow the flower-spikes, which are often produced in a downward direction, to pass through the basket when suspended from the roof. During the winter the Chimaera section may be grown in the intermediate house. The distinct Masdevallia deorsa, a Columbian species, with long, pendulous, fleshy, glaucous-green leaves, may be grown on a Teak-wood raft suspended from the roof, and will make a very attractive plant when in flower. These Orchids may be grown at the warm end of the cool house; care is needed when watering, especially after root-disturbance, as an excess of water before the roots are well-established in the compost will cause the leaves to fall; a copious supply of moisture will be required while the plants are growing actively, while light sprayings during hot weather are beneficial. Shade from strong sunshine is necessary, and a free circulation of air should be allowed on all favourable occasions. During winter, a much drier atmosphere is advisable, and only sufficient water to prevent extreme dryness; excess of moisture, with a low temperature, will promote the spread of black spot on the foliage. Thrips frequently attack the plants, and should be kept in check by fumigating during winter and spraying with an approved insecticide during the growing period. The species M. tovarensis and M. muscosa should not be fumigated when in, or about, to flower as they are easily damaged.

CYPRIPEDIUM SEEDLINGS.

All Cypripedium seedlings should be kept growing continually; those that have filled their present pots may be potted on, and others which have lost their roots, or are in sour compost, should receive attention. Use well-drained pots, the size of which may be governed by the strength of the plants; robust growers should not be restricted for pot room, and will often require a five-inch pot by the time the flowering-stage is reached. A suitable compost for small plants (and any with tessellated foliage) is two parts of A.1. fibre, one part Sphagnum-moss, and a liberal quantity of broken crocks; add one part good fibrous loam for the green-leaved section when the plants are large enough for three-inch pots.

If a house is used solely for the cultivation of seedlings there will be little difficulty in maintaining the required conditions; failing this a corner in the warm house may be found for them, where they may be accommodated near the glass and the surroundings kept humid. Water carefully and do not allow small plants to remain dry for long. Fumigate occasionally to keep thrips in check.

A few insectivorous plants, such as Drosera binata and Pinguicula caudata, if grown amongst the seedling pots, will trap the small fly which lays its eggs in the compost. The larvae of this fly disturbs the young seedlings, necessitating their removal to fresh compost. *W. G.*

INDOOR PLANTS.

BROWALLIA SPECIOSA MAJOR.

This plant (Fig. 52) is a member of the Nightshade family—Solanaceae, and is a splendid subject for greenhouse decoration. Some authorities grow it as a greenhouse perennial, but I think it is at its best when treated as an annual. From seeds sown early in March, good flowering plants should result by September or October.

When growing freely, it is necessary to pinch the growths once or twice to induce a certain bushiness of habit, but the extent of stopping will be ruled partly by the desired height of the plants. Single specimens may be grown in five-inch pots, while three plants in an eight-inch pot give a greater effect, and may be preferred for large glass structures. Violet-blue will, perhaps, best describe the colour of the flowers, this being relieved by the white throat. *C. Turner, Ampthill Park Gardens.*

BIGENERIC HYBRIDS AMONG THE AMARYLLIDEAE.

I have described three such hybrids—Brunsvigia × Amaryllis, Elisena × Ismene, Polianthes × Bravoa. In addition to these three, other authors have described two more—Prochnyanthes × Bravoa, Cooperia × Zephyranthes.

It is clear that we should not accept generic names as representing anything more than attempted systems of classification until such time as we have tested the epistemological basis upon which such systems of classification arose.

Such tests have been applied to the alleged genera Prochnyanthes, Bravoa and Polianthes (*Journal R.H.S.*, May, 1911, p. 603, "The Genus Polianthes") and have resulted in the excision of Prochnyanthes and Bravoa as generic names. In my view, Amaryllis should now include Brunsvigia (*Journal R.H.S.*, Vol. LI, Part I, 1926, "The Brunsdonnas"), and, undoubtedly, Herbert's two genera of Zephyranthes and Cooperia should be merged in one (*Journal R.H.S.*, March, 1913, p. 531, "Bigeneric hybrids of Cooperia and Zephyranthes").

Crindonna memoria Corsii.

But in Crindonna (Crinum × Amaryllis), which is the subject of this illustration (Fig. 53) and description, we are dealing with a "wide" cross between genera which stand, in appearance, at a great distance from each other. The fruits and seeds in these two genera are so dissimilar that one would not, at first sight, expect them to cross. But I have on record some interesting facts. I prepared an essay on "Generic Affinities among the Amaryllae" for the Fourth International Conference on Genetics (Paris, 1911). In this essay I listed 1181 attempted generic crosses made by myself between thirty-three reputed genera. Among these, Amaryllis had been pollenated with Crinum sixteen times without any sign of fruit resulting. But Crinum had been pollenated with Amaryllis only five times, and in four of these cases definite signs became visible that impregnation had been effected, although in no case was fertile seed obtained. Hence, I was rather surprised when I heard of Dr. Ragionieri's success on Amaryllis, followed by a confirmatory success at the hands of Mr. Howard (which latter may be the reverse cross).

Dr. Ragionieri has thus far only distributed bulbs from a single seedling (out of four seedlings raised). The plants distributed by Mr. Howard differ in some important respects from the former. The tube of the flowers is only one inch long, compared with five-and-a-half inches in Dr. Ragionieri's hybrid; the segments are nearly twice as wide, and the plants seem more robust and of more rapid growth than is the case in the Italian hybrid.

This latter I have seen in growth, but not in flower. But I have seen Mr. Howard's hybrid, in flower three times (two different importations), and have examined it in all stages of growth. My description and illustration are of Mr. Howard's hybrid, to which Dr. Ragionieri's description of his hybrid is attached separately.

It is unfortunate that no fruit of this hybrid is available for comparative purposes, but there can be no doubt that it is an intergeneric hybrid, and one fairly equipoised between its parents. Out of seventeen characters in which there is an easily discernible difference between the parents, the hybrid takes after Crinum Moorei in seven, after Amaryllis belladonna in six, and is intermediate in four characters.

Inasmuch as Dr. Ragionieri obtained (*Gard. Chron.*, of January 15, 1921), priority for his name of Crindonna memoria Corsii, it follows that Mr. Howard's name of Amarcrinum Howardi must be deleted, provided that the parents in both cases belonged to the same species.

But how is this knowledge to be attained? The names given by the raisers to the parents is on record. But we have no assurance that the Crinum Moorei was in either or in both cases a bulb gathered in its native habitat and correctly named, or whether it was one of those Crinums, something like C. Moorei, which was raised under cultivation and might itself be a hybrid Crinum. In the case of Amaryllis Belladonna the possibilities of error are enormous. For over two hundred years this species has been cultivated in the gardens of the world, and it is one hundred years since it is known to have been crossed with Brunsvigia. In my own garden I have some Brunsdonnas that only the most practised eye could differentiate from Amaryllis Belladonna, and even in important botanic gardens these plants are often incorrectly named (c. f. Hippeastrum Andreanum, in *Gard. Chron.*, 1880, Vol. II, p. 424) which is Amaryllis Belladonna.

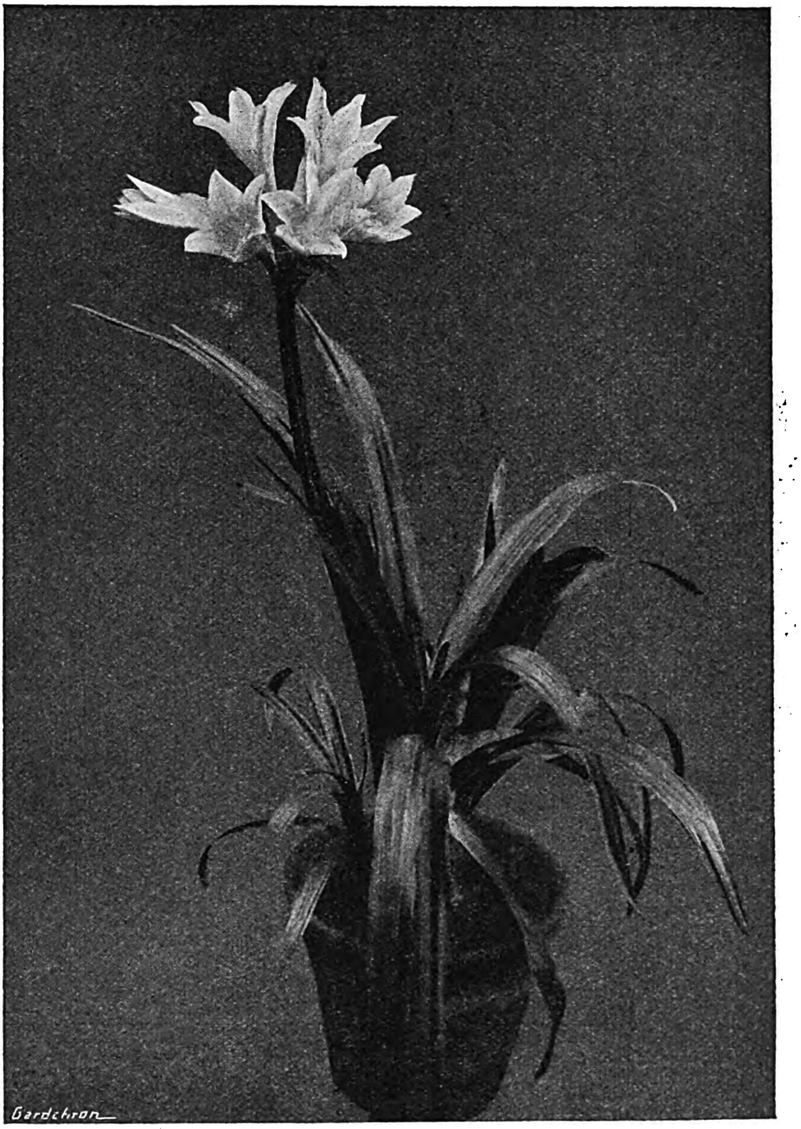

FIG. 53.—CRINDONNA MEMORIAE CORSII.

These remarks must be pardoned by Dr. Ragionieri and Mr. Howard, for they are not aimed at casting doubt upon their nomenclature, but simply to show the extreme difficulty of putting into effect the decision of the International Convention on Plant Nomenclature, against which so many gardeners protest.

In the comparative descriptions annexed I have taken the liberty of inserting Dr. Ragionieri's description of his original hybrid, from *The Gardeners' Chronicle* of January 15, 1921, having transposed his metric measurements into feet and inches for purposes of comparison with the rest of the descriptions.

It should be borne in mind that my descriptions of the parents of this hybrid have been culled from a very wide range of individual plants, whereas the descriptions of the hybrids cannot include the extreme ranges of variation that will manifest themselves when the whole of the seedlings from the original fruits have had time to flower.

As to sterility, the following memoranda are interesting:—

Dr. Ragionieri's original cross produced four fertile seeds. No. 0 carried imperfect flowers and has proved sterile. No. 1 has flowered and proved sterile. Nos. 2 and 3 have not yet flowered.

Mr. Howard's cross has not yet carried fruit in England, but I do not think that it is improbable that it may do so under suitable conditions.

In a new bigeneric hybrid, maturity in an individual plant is not necessarily the same thing as sexual maturity in the group. We have had many cases in which the earliest hybrids to flower were listed as sterile, but, after years had passed, the hybrid was found to be fertile. This has been the case both with the Brunsdonnas and with Ismene festalis, and also, I understand, with the Zephyranthes × Cooperia hybrids.

In a general sense, and putting away less obvious differences, Mr. Howard's hybrid has the appearance of a dwarf Crinum with crowded foliage. The flowers are of a brilliant full pink, like a compact, brilliantly-coloured form of Crinum Powelli. Owing to its free-flowering nature and its comparative hardiness, it is a welcome addition to our gardens, and its popularity will be increased by the fact that it has not the long, straggling leaves which characterise our hardy Crinums.

My thanks are due to Mr. J. Coutts, of Kew, for the help he gave me in research on this matter. The comparative descriptions follow.

	CRINUM MOOREI.	AMARYLLIS BELLADONNA.	CRINDONNA MEMORIA CORSII (HYBRID).	CRINDONNA M. CORSII VAR. HOWARDI (HYBRID).
Bulb.	Quite deciduous, 5″ to 6½″ diam. and up to 20″ circum. Not many offsets formed.	Deciduous, 3″ to 4″ diam. A moderate rate of increase by offsets.	Evergreen, 3¼″ to 3½″ diam., plentifully floriferous.	Partly deciduous, or liable to be cut down by frost, but the bases of the leaves are persistent and will push again. Bulb firm, 4″ diam. by 4″ high, weight as "dry bulb" about 21½ oz. Proliferous.
Bulb-tunics.	Brown, with arachnaceous fibres.	Light brown with arachnaceous fibres	Rather fibrous.	Light brown, moderately rough, arachnaceous fibres.
Pseudo-stem.	9″ to 15″ high. Partly deciduous.	None or very short. But some garden forms of doubtful origin have deciduous P. stem 7″ high.	"Neck" about 6″ long.	4″ to 5″ high. Not deciduous unless frozen.
Leaves.	Deciduous generally about flowering time when 0 to 18 leaves are seen; spreading, 2′ to 3½′ long by 4″ to 5″ wide.	Deciduous at midsummer and after, growing in winter and spring. Distichous, 7 to 9, 12″ to 18″ long by 1″ to 2″ wide. Var. *blanda* has leaves 3′ long, of a bluish-glaucous grey-green colour.	Sub-distichous, dark green, sub-carinate, sometimes drooping, 10 to 12, 2′ 4″ to 3′ long by 1¼″ to 1½″ wide. Evergreen, growing mainly at the end of summer.	Somewhat distichous and some few spreading, deep green, irregularly channelled, glabrous, with blunt apex. Evergreen in part, the leaves of two seasons' growth being present at flowering time, about 3 being old leaves and 12 new, 2′ long by 2″ wide.
Temperature of Foliation.	45°F. and upwards.	About 40°F.		Below 50°. Growth continues at 40°F.
Resistance of Foliage to Frost.	Foliage non-resistant.	Withstands several degrees of frost.	Cut down by 4° to 9° F. below freezing point.	Withstands several degrees of frost.
Hardiness of Bulb.	Greenhouse.	Hardy in Cornwall, and at south of wall about London.	Hardy about Florence. Not tested in England.	As hardy as Amaryllis.
Scape.	Sub-fistulose, 2′ to 5′ high, bearing 6 to 16 flowers in a fairly regular umbel of 12″ span.	Solid, slightly flattened, with Plum-like, purple-blue bloom at base, 1′ to 3′ high, bearing 6 to 12 flowers, all pointing one way in an irregular umbel.	Stout compressed, purplish at base, sub-glaucous. About 19″ to 20″ high, bearing an umbel of 8 to 12 flowers.	Much flattened, overtopping the foliage, bearing about 17 flowers in an erect, regular umbel which spans 8″ across.
Spathe.	4″ long, persistent during flowering	2″ to 2½″ long, deciduous.	About 5″ long by 1½″ wide, with rose-coloured keel throughout.	3″ long by 1½″ wide. Persistent.
Bracteoles.	Linear, up to 2½″ long, one to every pedicel.	1″ to 2″ long.		Each pedicel subtended by one bracteole rather shorter than the spathe valves.
Pedicels.	Erect, 1″ to 3¾″ long.	Erect, 1″ to 2″ long at flowering, becoming 4″ long when carrying ripe fruit.		Erect, nearly 1″ long at flowering time.
Tube.	3″ to 4″ long, permanently curved.	From a mere trace up to ½″ long, straight.	5½″ long, slightly curved.	1″ long, erect or slightly curved.
Flowers.	White to blush (crimson-pink in one var.) expanding in succession. Partly closed in daytime, open and fragrant at night with sweet but rather sickly odour. Flowers at various times of year.	Rose-red to pale blush, the colour becoming more intense and more purplish a few days after expansion. Expand with such short intervals between the several flowers that they may be found all expanded on the same day. Remain continuously expanded at all hours, and have a very fragrant hyacinthine odour. Period of flowering early autumn.	Pinkish-rose, deeper coloured in the centre and at the apex. Flowering time (in Florence) August.	On expansion, a full-rosy-pink, but becoming lighter and tawny-coloured in a few days. Base white, apices purple. Not very widely expanded and retaining the same expansion day and night. Of the 17 flowers about 4 to 6 may be found open on the same day. Fragrance slightly hyacinthine. Period of flowering, autumn.
Limb of Perianth.	3″ to 4″	2″ to 5″.	8″ including tube and pedicel (about 3″ for limb only).	4″.
Span of Perianth.	Fully expanded 5″½ to 7″.	3″ to 3½″.	4″.	4″.
Max. Width of Segments.	1″ to 2″, inner segments much the widest.	⅓″ to 1¾″.	Acuminate. 3 external ¾″, 3 internal 1¼″.	Irregularly ribbed; 3 external 1¼″, 3 internal 2″.
Stamens.	Stout and short, ascending. Pink or white.	Following colouration of flower. Contiguous below. 3 shorter than the rest.	Shorter than limb and same colouration.	Lying contiguously along lower inner seg. shorter than style. Following colouration of flower.
Anthers.	⅓″ to 1″ long, purple (white in albinos.)	Tawny.	Linear.	¾″ long. White.
Pollen.	Cream colour (white in albinos.)	Dusty white.		White.
Style.	Very slender, longer than stamens.	Ascending; exceeding stamens, but shorter than limb; ruddy above.	Rather shorter than limb. Dark rose-pink.	Nearly as long as limb. Becoming more erect than stamens. Purple above.
Stigma.	Bifid (one lobe suppressed ?)	Tri-capitate.	Trifid.	Bifid (one lobe suppressed ?).
Germen (Ovaries).	Globose.	Bluntly trigonal. Subturbinate.		Elongated oval.
Ovules.	Few in a cell, sometimes only 2. Sessile, or immersed in the thick placenta.	Many.		8 or less, superposed. Sometimes absent. Nearly sessile or immersed in thick placenta. Very difficult to find.

	CRINUM MOOREI.	AMARYLLIS BELLADONNA.	CRINDONNA MEMORIA. CORSII (HYBRID).	CRINDONNA M. CORSII VAR. HOWARDI (HYBRID).
Fruit.	Irregularly globose, carrying about 2 seeds.	Globose, 1" diam., bursting irregularly. Carrying usually 3 seeds, but in some forms about 8. Limits of number 2 to 14.	Of the original 4 seedlings only 2 have yet flowered and have both proved sterile thus far.	No fruit available for examination.
Parturition.	About a month or more after impregnation.	From 7 weeks to 3 months.		
Seeds.	Large, green, bulbiform. In colour and integuments resembling the bulb; 2" to 1½" diam. or less, usually singly or in pairs, weight about ½oz. each down to about 1oz. The variegated C. Moorei has rather smaller, pale to whitish seeds which all grow into variegated plants.	Pearly, pink to white, semi-transparent, talc-like and slippery. From ¼" to ⅝" diam. 19 seeds weigh about 1oz.		
Germination.	A few weeks.	A few weeks.		
Maturity.	Reached in 2½ to 3 years.	Reached in 4½ to 6 years.	5 years, or more.	

A. Worsley, Isleworth.

BULB GARDEN.

LILIUM CENTIFOLIUM.

I enclose a photograph of Lilium centifolium taken in the gardens at Hidcote Manor, Campden, Gloucestershire, the residence of Major Johnson. This Lilium was introduced by the late Mr. Reginald Farrer as sp. 316. The bulb was planted six years ago, and in 1927 carried thirty-four blooms on the two stems shown; the growths reached eight feet six inches in height and bloomed in August (Fig. 54). *Anthony Webb, Broad Oaks Road, Solihull.*

GALANTHUS BYZANTINUS.

We have pleasure in enclosing herewith a few specimens of the true Galanthus byzantinus, which we think may be of interest. This is the largest-flowered and finest of all the Snowdrops, being a considerably finer plant than Galanthus Elwesii and quite distinct from it. G. byzantinus has large, handsome, green foliage quite distinct from the glaucous foliage of G. Elwesii and, besides, it is a stronger grower. It may easily be forced into flower by Christmas. The flowers are of similar shape to those of G. Elwesii, but a trifle larger, the inner tube being marked green in a similar manner. *Barr and Sons.*

[The flowers were very fine, carried on stems seven inches long, as measured from their emergence between the broad leaves.—Eds.]

IXIOLIRION PALLASII.

Ixiolirions make but slow progress in the affections of lovers of gardens; this is probably due more to want of knowledge of their attractions than to any fault of the plants.

They are pleasing hardy bulbs, flowering, as a rule, in May, and are excellent for grouping in the border, rock garden or grass. Some difference of opinion regarding their precise nomenclature appears to exist, but the bulb under notice may generally be purchased either as I. Pallasii or I. tataricum.

Under whatever name it may be received it is sure to give considerable pleasure, but it should not be planted with fewer than half-a-dozen, but preferably with a dozen, bulbs in each clump. It is procurable with other bulbs in autumn, and should be planted so soon as received, about two inches deep and the same distance apart. This species is about one foot in height, and bears pretty heads of blue flowers.

Ixiolirion Pallasii may be planted in a light, sandy, well-drained soil; if the soil is very light, the bulbs may be planted about half-an-inch deeper than the depth mentioned above. Bulbs of I. Pallasii are quite cheap, and those who grow this plant for the first time will be gratified at making its acquaintance and adding to the delights of their gardens. *S. Arnott.*

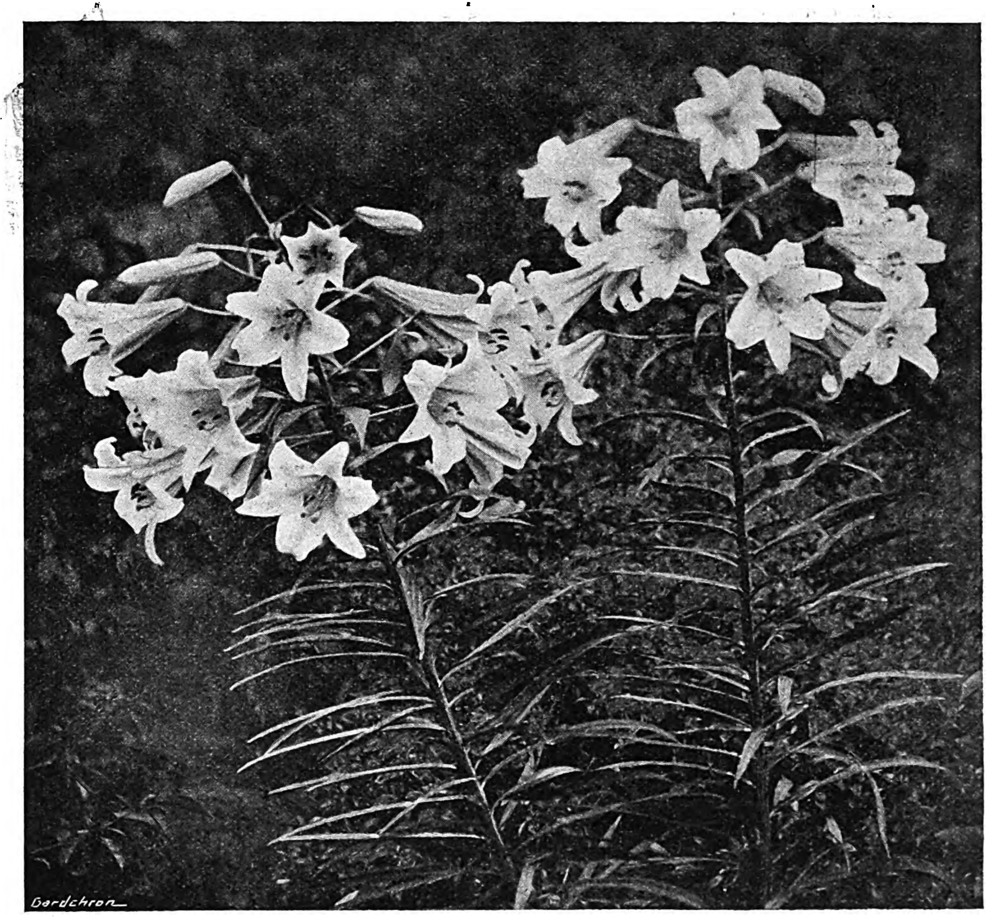

FIG. 54.—LILIUM CENTIFOLIUM AT HIDCOTE MANOR.

TREES AND SHRUBS.

LONICERA FRAGRANTISSIMA.

This highly fragrant Chinese shrub, although described by many authorities as deciduous, retains a good deal of its foliage throughout the winter if grown in favourable positions in mild localities. I have cut sprigs studded with its small, white flowers and with the foliage in perfect condition in the month of January.

Introduced so far back as 1845, L. fragrantissima is not very widely grown, probably because it is not considered sufficiently hardy to withstand our winters, but my experience is that it is much hardier than is usually supposed. Certainly it will stand frost of considerable intensity without injury if planted in a dry position, but as this tends to foster early growth in the spring, the position chosen should not be exposed to cutting winds.

In warm, sunny positions, sheltered from the north and east winds it would probably withstand our winters in almost any district of England. An essential factor is dryness at the roots, and on heavy soils it might be necessary to drain the position, remove the natural soil, and provide a more porous compost. It is well worth while to take pains in preparing for the successful culture of this shrub, for it has many attractions. It is vigorous in growth, has pleasing foliage, is delightfully fragrant and flowers profusely so early in the year that it might be called a winter-flowering shrub.

Propagation is readily effected by means of cuttings of ripened wood inserted in the autumn, or by soft-wood cuttings placed in heat in the spring. *W. Auton.*

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MR. F. KINGDON WARD'S NINTH EXPEDITION IN ASIA.*

XXV.—THE MISHMI HILLS.

THE Mishmi tribe are quite unlike any people we had come across hitherto. They are more naked even than the Nungs, and dirtier than the Tarons, but more virile than either. Some of the girls we saw were not bad-looking either. Women and girls wear a short kilt and a brief, sleeveless jacket, very tight, so that there is generally a hiatus between the end of the jacket and the beginning of the skirt. In both sexes the coarse black hair is tied in a knot on the top of the head, and through this the women thrust two long silver skewers; round their necks they wear silver hoops, or collars made of rupees. The male garment—there is only one—may be described as a sort of sleeveless shirt, but open all down the front, and ceasing well above the knees. They carry a leather or skin bag over each shoulder, and wear Bamboo tubes, or silver rings, in their ears. Sometimes a closely woven cane helmet is worn on the head, and most of the men wear scarves, which are of various patterns. Such, in brief, were the cheerful folk we now had as coolies—and very good coolies they proved.

On November 29, we marched for seven hours, but the path was bad, with stiff ascents and descents, so that we did not reach Minzong, where the river, which has all this time been flowing due south, swings sharply round to the west to reach the plains. A good part of the time we were in forest, sometimes in high grass and bush, or amongst Pine trees again; only once were we in the river bed.

In the evening we camped near some cultivation in a very picturesque spot, whence we looked down the narrowing valley, with its closely dovetailed spurs, and saw the snow glittering on the tops. The river was everywhere a rushing, impetuous torrent.

I was up before daylight next day, anxious to be off and to reach Minzong, an important landmark on the trip. But the Mishmis are like the cold-weather butterflies, very sluggish before the sun is over the ridge and the dew dried off the grass; so it was 10.30 before we started. We reached Minzong in three hours, and the coolies wanted to go back, which meant no further progress that day; but I persuaded them to go on, and arranged with the headman of Minzong to send along a fresh relay first thing in the morning, while we were breakfasting. Eventually we did another three or four miles over bad ground, and camped at dusk; by this means I hoped to gain a little time. However, I did not know my Mishmis! All that happened was that next morning the Minzong coolies did not arrive until about midday, so we might just as well have stayed the night there and started at ten o'clock.

Below Minzong, the jungle grows thicker again and Pines are still more scarce. There were several species of Ficus, and many Rutaceae; Caesalpinia, Castanopsis, Fraxinus, Engelhardtia, Pentapterygium (in flower), etc. On the rocks were many white-flowered Begonias, also a pink-flowered one, and Orchids, both terrestrial and epiphytic, began to make a show; amongst the former, a Phaius or Calanthe was in flower, amongst the latter a Cymbidium. I noticed also Impatiens, various Gesneraceae and Acanthaceae, and an Arisaema.

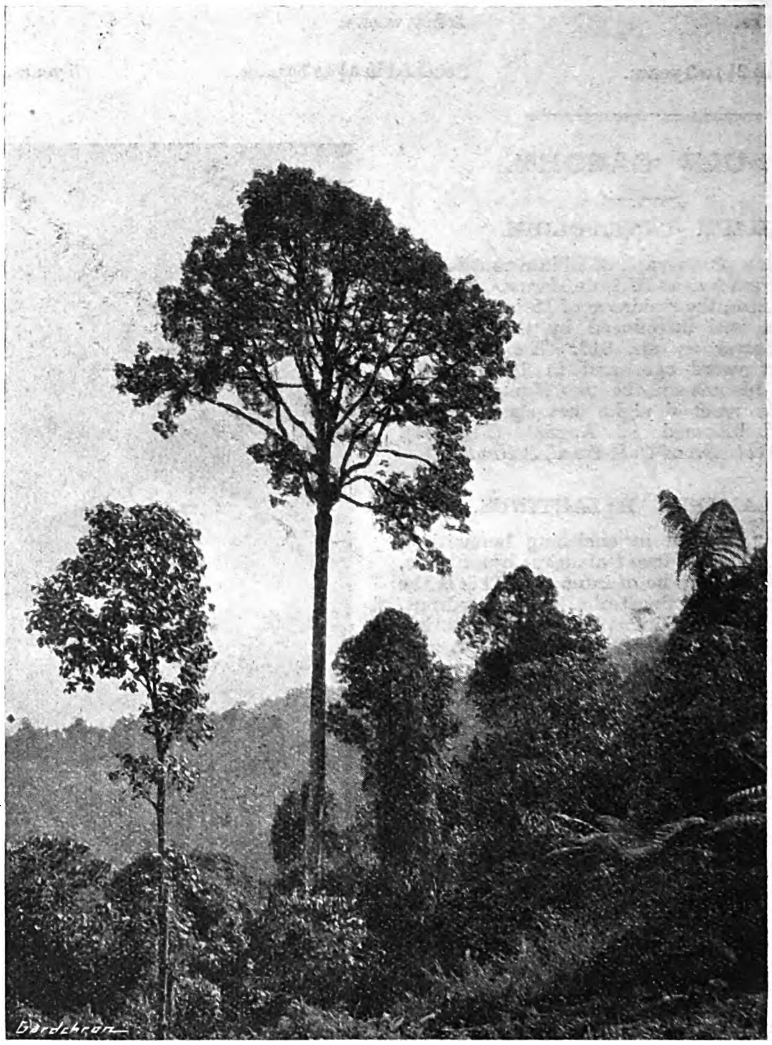

FIG. 55.—DIPTEROCARPUS SP. IN THE ASSAM HILLS.

The valley became more and more picturesque, wooded to the water's edge, the bold spurs rising very steeply, then sloping back to lofty pinnacles which were only visible some distance ahead or behind.

The late start on December 1 made the stage a short one, and we had marched only five hours before darkness compelled us to camp. In fact, the coolies, who had already disgraced themselves by turning up so late, wanted to camp much earlier, saying that there was no water further on—the usual formula; but as this country is always wringing wet, even in the 'dry' season, it only means that it is a mile to the next stream, or an hour's march to the next camping ground. However, this time we happened to find the next camping ground already occupied, so we had to push on, and by the time it was too dark to see we just had to camp in amongst some high reeds, where there was no water, except in the river, far below. It was a clear, cold night, and the reeds, amongst which we were huddled like a flock of warblers, gave a most inadequate fire.

We were now really in the jungle, and the familiar cries of Indo-Malaya were always in our ears—the defiant yelp of the barking deer, the childish cackle of laughing thrushes squabbling under the Bamboos, and the everlasting buzz of cicadas. An enormous green grasshopper or locust used to flutter precariously about in open places, and a very devilish-looking praying mantis—it ought to be called preying mantis—was fairly common. We met numbers of people on the road now, both Tibetans and Mishmis, all coming from Sadiya and carrying heavy loads; the former were Zayul men, from Rima, or from the mysterious Rong Thod river.

In our nest amongst the reeds, the temperature dropped to 43°, and a heavy dew made everything sodden in the morning, so that I was glad to start. We marched for eight hours and halted by a large stream. The path was improving every day, and on December 2 we found it more open, and in a tolerably good state of repair. Generally, we were in forest, high above the river, once in tall grass, and once on a regular terrace with scattered Pine trees again; but this feature was practically extinct, although a fringe of Pines clothed the rocky ridges far above us. We also crossed a lot of steep, cultivated ground.

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* The previous articles on Mr. Kingdon Ward's Ninth Expedition in Asia were published in our issues of August 14, 28, October 9 and November 20, 1926, and January 1, February 19, March 5, 19, April 9, 30, June 4, 18, July 30, August 20, September 10, October 1, 15, November 5, 10, December 3, 17, 31, 1927, and January 14 and 28, 1928.

The coolies halted rather too frequently, either to cut and coil up some forest creeper to be used as a rope, or to strip the bark from some sapling, to be used for binding things; or because of some genuine obstruction, a fallen tree, or a rock slide, or a tangle of felled jungle that had not yet been burnt for cultivation. But in spite of my anxiety as to the food supply and consequent impatience of every delay, I felt we really were getting on now, although we were five marches from the last bungalow on the Lohit valley road.

We saw a new and startling kind of rope bridge here, made of telegraph wire; there were nine strands, but not bound together in any way. Somehow it did not look nearly so secure as the ordinary Bamboo rope, and it gave me the impression that here the Mishmis were dealing with an alien material, of which they had no knowledge as to its tensile strength. Of course, this was purely imaginary—but such is the force of custom. The wire was a relic of the 1912 expedition (Fig. 57)—it was cheaper to leave it on the abandoned road than to carry it back to Sadiya!

On December 3, we again started late, because only six coolies turned up. The others, who ought to have been relieved, naturally did not want to go on, but we eventually persuaded them to do another day's march. The valley was more thickly populated here, and the village headman brought me eggs and occasionally a fowl or two. By the evening we were about fifty miles from the bungalow, but the path was getting difficult again.

Next day, however, we really made some impression on the distance. Hereabouts, the Lohit river makes a semicircle to the north, adding miles to its course. At the summit of the bend, two considerable rivers flowing due south from the horse-shoe-shaped range to the north, enter the Lohit within a mile of each other. After a variety of country, jungle, cultivation and river bed, we came suddenly and rather unexpectedly upon the Dou river, spanned by the remains of the old suspension bridge, which, though hanging in picturesque festoons, was still passable. Half-an-hour later, we reached the Delei river, over which hung an even more dilapidated bridge; and having crossed to the far bank, we camped. The Delei valley is thickly populated, and at its head is an easy pass, between peaks 16,000 feet high. Not far distant are great ranges of snow mountains. The confluence of the Delei and the Lohit is three marches from the bungalow, which marks the administrative frontier.

The Delei valley, then, was exactly what I wanted, and provided the thing could be worked in the right quarters, the real object in coming out by the Lohit valley was already accomplished. For years I had wanted to base an expedition on Sadiya, in order to tackle the high frontier range, of which I had gleaned certain information from the reports of the 1912 expedition; now at last, I was within measurable distance of success.

We marched through dense jungle, full of scent and sound, on December 5. There were still spurs to climb, still deep streams to cross, still long stretches of boulder to scramble over in the river bed. Nevertheless, although we could see nothing even of the foothills ahead, owing partly to the bend of the valley, and partly to its narrowness, it was evident that we must shortly emerge on to the plains.

Quite dramatic was the next march. In the morning we finished the last of the Rice and flour, and hoped for the best. We reached the Tidding river in five hours, and marched up the bed, the going here being particularly obnoxious. At 4.30, the coolies wanted to halt; I urged them on, and we marched for several miles knee deep in water. It was dark when we reached the suspension bridge (this one is kept up!), and here the coolies did halt; nothing would make them budge. They lit a fire, cooked their meal, and began to settle down for the night. I was quite willing to halt, too, but found, to my disgust, that both the servants had gone on ahead, so I sent one of the Mishmi guides after them, to bring them back.

About an hour later—it was now quite dark, of course—I saw a lantern swinging about in the jungle, appearing and disappearing on the far bank of the river; five minutes later one of my erring servants arrived with the Durwan from the bungalow, who informed me that the bungalow was only a mile away, and assistance was at hand. So we let the Mishmis finish their supper, and then galvanised them into activity sufficient to do one more mile. Torches were lit, and following the lantern, we all stumbled along over roots and boulders until we came to a small post situated in a clearing. It was Theronliang, the last post on the Lohit valley road, about sixty miles from Sadiya; quite unintentionally we had done the last two stages in a day. *F. Kingdon Ward.*

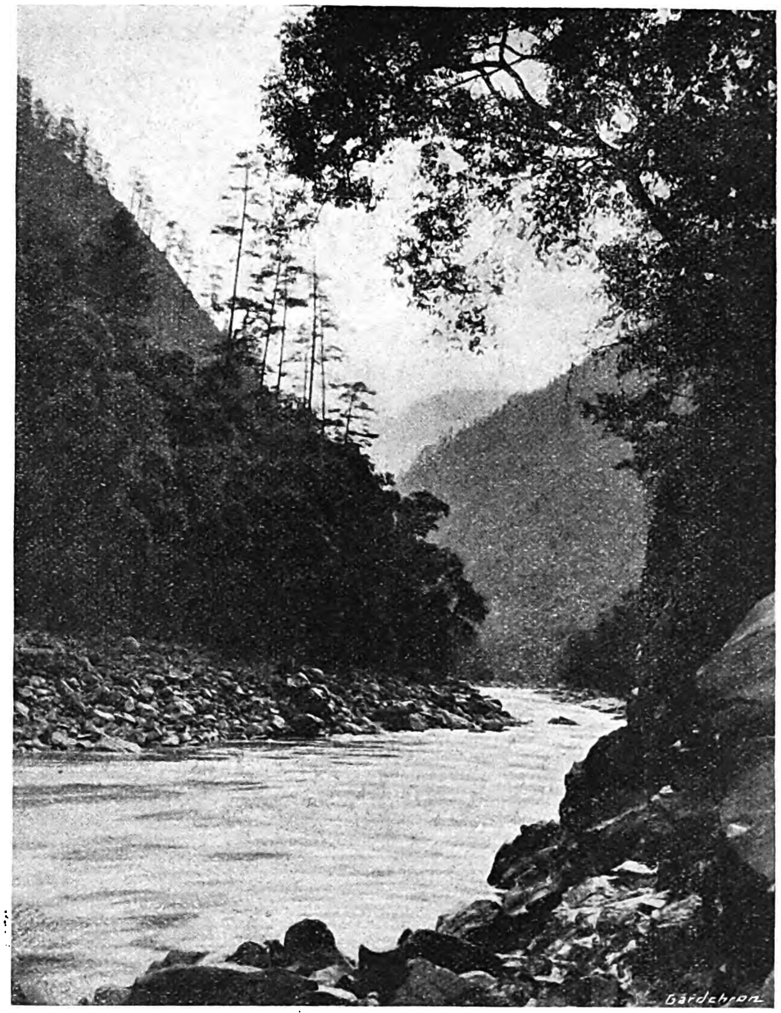

FIG. 56.—LOHIT BRAHMAPUTRA, BELOW RIMA, ON THE WAY TO ASSAM.

NOTES FROM A WELSH GARDEN.

In so far as my own records go, the frosty spell which occurred at the end of last December was the sharpest we have had since 1895. Although the visitation was, happily, not of many days' duration, it finished with a bitter wind which, in a general way, did as much mischief as the frost. The minimum temperature registered here was 21°, and that for several nights, but I feel sure the mercury fell lower still in some parts of the garden.

While it is too soon to estimate the losses with any accuracy, a good many subjects already show sufficient indications of the injury inflicted. Fortunately, the soil was dry when the frost came. Had it been otherwise, the smaller plants would have fared worse. As it is, the half hardy and tender shrubs present the most melancholy spectacle. Old bushes of Cytisus fragrans, four to five inches around the base, have been killed, and practically all the large-leaved Veronicas look pretty hopeless. Lavandula dentata and L. Stoechas are entirely wiped out, as is the prostrate Rosemary; yet Lithospermum rosmarinifolium, which I referred to some time ago as being at least so hardy as that Rosemary, was only injured at the tips, and within a week of the break-up of the frost was in full flower again. As the plant—a large one—had no protection of any sort, this test is, I think, conclusive proof of the durability of this fine plant. Another surprise is Olearia semidentata, that appears to be but little the worse, whereas O. Solandri is dead to the base. Senecio rotundifolius is in a bad way, as is Dendromecon rigidum—an old specimen on a wall—but Fremontia californica, rising several feet above the top of a low fence and fully exposed to the cutting wind as well as to the frost, does not seem to have lost a leaf. This adds further testimony to the opinion, not infrequently expressed of late, that F. californica is very much hardier than is generally supposed. This last statement might also be applied to all of the better-known Leptospermums. These seem to be but little affected, yet a large bush of Corokia macrocarpa growing close by them is practically destroyed.

Sedum Palmeri is a Mexican species of great beauty of foliage and flower, and it is pleasant to be able to state that it has not only survived the above ordeal entirely unprotected, but is apparently unharmed. In fact, the lovely, glaucous, pea-green rosettes are already (January 20) putting forth their sprays of orange-yellow blooms. Many plants have a way of rushing into leaf or blossom when mild weather follows a cold spell, which is, of course, no more than an aspect of the forcing process following retardation or other "check." The Winter Aconites, which are always finer in colour and size after being naturally retarded, have been quick to respond to this, but more surprising is Anemone caerulea, which has already opened several blossoms. Snowdrops and other early bulbs have also sprung up with unusual rapidity.

While the frost soon put an end to most of those fruits which usually remain well into the winter, on some Cotoneasters and other subjects—even those of C. Simonsii being reduced to jelly—those of the Pernettyas are untouched either by the frost or birds. Two large bushes of P. mucronata hybrids, one with white and the other with blood-red fruits, have been most cheerful and singularly beautiful all the winter, and the crop will doubtless be carried until April or May. Most of these berries are about half-an-inch in diameter, borne in dense clusters and sprays in extraordinary abundance. If these Pernettyas are apt to be troublesome owing to suckering, one willingly forgives any transgressions in a subject of such unique value in the winter garden, especially an evergreen.

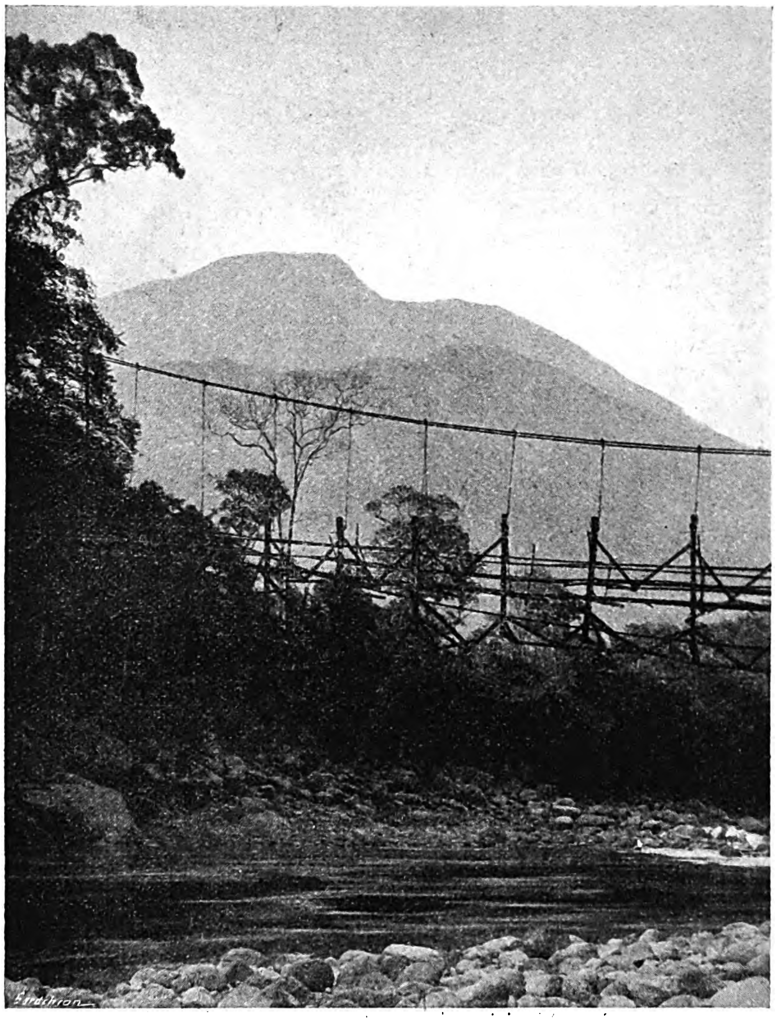

FIG. 57.—REMAINS OF GOVERNMENT SUSPENSION BRIDGE OVER THE DOU RIVER, LOHIT VALLEY.

The bridge has been abandoned.

An accident having befallen a much older specimen, a sapling of Hamamelis mollis is doing its best to make good the loss by being tufted from base to tip with the bright yellow blossoms of this fine Witch Hazel. A welcome, but shriller yellow in the woodland undergrowth is also afforded by Berberis aquifolium, and before these lines are in print, B. Bealei and B. japonica (of the lists) will be wearing their jaunty cockades.

In addition to those foliage plants recently referred to which show to best advantage in winter, may be added Euphorbia Wulfenii. This Spurge, which will attain a height of nearly three feet, is an evergreen, sub-shrubby species. It appears to be reasonably hardy but dislikes wind. Given a sheltered corner, the bold tufts of long, narrow leaves, with which its tall stems are terminated, are at this season a beautiful glaucous green, almost blue in some lights. A mid-rib of plum-purple, with a soft dove-coloured sheen, completes the "make-up" of E. Wulfenii. The flowers often appear so early as March in immense heads of yellowy-green. I am trying this noble Spurge under tall, deciduous woodland trees where, if it succeeds, it will derive some shelter, and no doubt fully maintain its reputation as a highly ornamental foliage plant at a season of comparative dullness.

An old plant of Daphne Blagayana, some three feet or more across, has already opened enough of its ivory blossoms to impart their delightful Lily-like fragrance every mild day. For this plant to be in flower before the end of January is, of course, premature. D. Blagayana appears to be frost-proof, even when in bloom, and its flowering is such a cautious, leisurely process that I do not doubt but that it will be as sweet two months hence as it is to-day. *A. T. Johnson, Ro Wen, Conway, North Wales.*

PLANTS IN FLOWER AT LA MORTOLA IN JANUARY.

The following list of plants in flower in Mr. Cecil Hanbury's garden at La Mortola, Ventimiglia, Italy, during January, 1928, has been supplied to us by Mr. S. W. McLeod Braggins, Superintendent of the gardens.

Abelia chinensis, Abutilon Darwini, A. hybridum, A. striatum, Acacia acinacea, A. Hanburyana, A. decurrens, A. neriifolia, A. podalyriaefolia, A. Sieberiana, Agathaea coelestis, A. hispida, Ageratum mexicanum, Albizzia lophantha, Aloe arborescens Milleri, A. a. natalensis, A. a. Ucriae, A. caesia, A. Candelabrum, A. ciliaris, A. comosa, A. ferox, A. Johnstonii, A. laetecoccinea, A. rubrolutea, A. rubroviolacea, A. Salm Dyckiana, A. speciosa, A. spinosissima, A. supralaevis, A. Winteri, Alyssum maritimum, Anagyris foetida, Andropogon hirtus, Anemone coronaria, Antirrhinum majus, Aponogeton distachyum, Arbutus Unedo, Asparagus aphyllus, A. crispus and Azalea indica.

Banksia marcescens, Bellis sylvestris, Berberis glauca, Bergenia crassifolia, Billbergia speciosa, Bougainvillaea glabra, B. lateritia, Buddleia asiatica, B. auriculata, B. madagascariensis, B. officinalis and B. hybrida.

Caesalpinia tinctoria, Campanula Trachelium, Canarina campanulata, Cassia artemisioides, C. tomentosa, Cheiranthus Cheiri, Chimonanthus fragrans, Cineraria stellata, Citrus Medica, Centranthus ruber, Clematis cirrhosa, Clerodendron ugandense, Colletia cruciata, C. spinosa, Coronilla glauca, Cotyledon macrantha, Crassula lactea, Cupressus Lawsoniana, Cyrtanthus hybrida and Cyperus alternifolius.

Dasylirion glaucophyllum, D. serratifolium, Dimorphotheca Ecklonis, Diplopappus filifolius, and Dianthus Caryophyllus.

Echeveria gibbiflora, E. coccinea, E. multicaulis, E. pachyphytoides, Ephedra altissima, Eriocephalus africanus, Eucalyptus coriacea, E. crebra, E. diversicolor, E. Globulus, E. leucoxylon, E. melliodora, Eupatorium album, E. calaminthaefolium, E. grandiflorum, E. micranthum and Euphorbia grandicornis.

Freylinia oppositifolia and Fumaria officinalis.

Gazania splendens, Genista monosperma, Gerbera hybrida, Grevillea Preissei, G. Thelemanniana and Gynerium argenteum.

Hakea cristata, Hardenbergia Comptoniana, H. monophylla, Heliotropium peruvianum, Helleborus hybridus and Hyacinthus romanus.

Iberis semperflorens, Iris germanica and I. unguicularis.

Jacobinia pauciflora, J. penrhosiensis, Jasminum nudiflorum, J. primulinum and Juniperus Oxycedrus.

Lardizabala biternata, Lathyrus odoratus, L. sativus, Laurus nobilis, Lavandula abrotanoides, L. dentata, Linaria maroccana and Lonicera Standishii.

Mahonia (Berberis) Bealei, Malcomia maritima, Matthiola hybrida, Mesembryanthemum blandum, M. aequilaterale, M. Bolusii, M. corniculatum, M. diversifolium, M. echinatum, M. laeve, M. linguiforme, M. sp. 21, M. subincanum, Mimosa sensitiva, Montanoa bipinnatifida, M. tomentosa and Monstera deliciosa.

Narcissus canariensis, N. Tazetta, Nemesia strumosa, Nicotiana glauca and N. Sanderiana.

Odontospermum sericeum, Osmanthus fragrans, Oxalis cernua, and Oxalis purpurea.

Pelargonium lateripes, P. odoratissimum, P. peltatum, P. zonale, Peumus Boldus, Phylica rosmarinifolia, Pilocarpus pennatifolius, Pithecoctenium buccinatorium, Polygala myrtifolia, P. apopetala, Primula kewensis, P. malacoides, P. sinensis and Pycnostachys Dawei.

Raphiolepis indica, Reinwardtia trigyna, Reseda odorata, Rhamnus Alaternus, Rosa Banksiae, R. Bourbonia, R. indica, R. sinica anemoneflora, R. Safrano, Rosmarinus officinalis, R. humilis, Ruscus Hypoglossum, R. Hypophyllum and Russelia juncea.

Salvia amarassima, S. discolor, S. Grahami,

S. Heeri, S. semiatrata, S. Sessii, Schinus Molle, Senecio angulatus, S. deltoides, S. grandiflorus, S. longifolius, Sida mollis, Solanum auriculatum, S. jasminoides, S. nigrum, S. sisymbrifolium, Sparmannia africana, Statice brassicaefolia, S. macrophylla, S. macroptera, and S. Perezii.

Tagetes lacera, Templetonia retusa, Teucrium fruticans and Tropaeolum majus.

Verbena officinalis, Veronica Andersonii, V. salicifolia, Viburnum Tinus, Vinca major, V. media, Viola odorata and Vittadina triloba.

Yucca flexilis.

It may be of interest to observe that the above list was made on January 17, after four inches of rain had fallen on the 16th inst. On December 17 sleet fell, and while the garden was in a saturated condition the temperature fell to 6° Centigrade below freezing point, accompanied by a bitter north wind and five inches of snow; this caused much damage to semi-tropical plants. The total rainfall for 1927 was forty inches of which nineteen inches fell during November and December.

A DISEASE OF THE DOUGLAS FIR AND OTHER CONIFERS.

There are three known species of Dermatea which occur on the bark of Conifers—D. laricicola, Fuckel, on European Larch, D. eucrita, Karst., on Pine, Silver Fir, Spruce and Douglas Fir, and D. livida, Berk. et Br., on Pine. The former has always been regarded as a saprophyte, so no further attention was directed to it in the present work. The two last-named species, however, have sometimes been described as parasites, but the evidence appears to be inconclusive, so an investigation of the subject was undertaken. This has now been in progress for eighteen months, and the following facts of general importance have been discovered.

The fungi which have been identified as D. livida are not all identical, but can be divided into two groups according to the size of the ascospores. Those with the smaller ascospores do not agree with any previous description and must probably be regarded as a new species (Fig. 58); so far as can be ascertained, all the records of parasitism refer to this fungus and not to the true D. livida. As a result of culture work, it was found that the conidial stage of this fungus is Myxosporium abietinum, Rostrup, (Fig. 59), which was described by Rostrup as a parasite on Sitka Spruce, European Larch and Douglas Fir.

Dermatea eucrita, Karst., has been described as a parasite on Sitka Spruce in Eastern Germany by Neger. The infected twigs had, however, been previously injured by frost, and no infection experiments were carried out. More recently this fungus was mentioned as a parasite on Douglas Fir in Holland by de Hoogh, but when the trees were examined in September, 1927, by the writer, no definite evidence of parasitism could be found; the fructifications occurred chiefly on cankers caused by Phomopsis pseudotsugae, Wilson, and where this was not the case the apothecia were few and scattered, and the trees appeared perfectly healthy. Further material of D. eucrita was obtained from near Newcastle on Sitka Spruce twigs which had been injured by frost. Cultures of this fungus have not yet formed conidia, and infection experiments on Douglas Fir and Norway Spruce have given no positive results.

Dermatea livida, Berk. et Br., appears to be purely saprophytic and has been found only on dead branches of Scots Pine. It forms a Myxosporium stage in culture. Inoculations on Scots Pine and Norway Spruce have all given negative results; in one case a considerable number of apothecia developed on a small piece of the bark which had been killed by wounding at the time the branch was inoculated, but even six months after the date of infection there was no sign of the fungus growing into the living tissues.

The third fungus, which has previously been confused with Dermatea livida, was first described as a parasite in 1911 by C. O. Farquharson. He found it on Douglas Fir in Aberdeenshire and sent a specimen to Kew, where it was identified as Scleroderris livida, Massee. More recently it has been collected on Cupressus Lawsoniana, in Devonshire, on Abies nobilis in Sutherlandshire, and on Douglas Fir in Inverness-shire, Hampshire and Peeblesshire. In the first four cases it was said to be causing the death of the trees, but in the fifth case the parasitism was doubtful, as the trees had been previously injured by fire. Information has been obtained that the Myxosporium stage is not uncommon in Southern England. In the Forest of Dean it has been found abundantly on dying Douglas Firs, but no Dermatea was present; these trees were planted in an unsuitable situation, and may only have been attacked by the fungus after their vitality had been lowered by unfavourable conditions. A number of young Douglas Firs in a nursery in the New Forest are infected and fructifications both of Myxosporium and Dermatea occur on the bark. The trees are dying, and in this case there is no reason to believe that they were in any way weakened before attack. Fructifications of Myxosporium have been found on the bark of the Douglas Firs infected with Dermatea in Peeblesshire, but, as already stated, these trees had been previously injured by fire. It was obtained from Sutherlandshire on specimens of Abies nobilis growing near those infected with Dermatea, but the trees were also severely attacked by Chermes. The Myxosporium stage alone was found on a branch of an old Douglas Fir at Harpenden, Hertfordshire. This branch was still living but was growing badly as a result of shading, and was infested with Chermes; there was no trace of Myxosporium on the upper, actively growing branches. A considerable number of infection experiments have been carried out with this fungus on Douglas Fir, Abies pectinata, Cupressus Lawsoniana and Pinus sylvestris, but up to the present time no positive results have been obtained. Judging by field observations, however, it seems probable that it is a weak parasite, and further experiments are being carried out to determine the degree of parasitism and the possible risk to forest trees. *M. J. F. Wilson, Mycology Department, University of Edinburgh.*

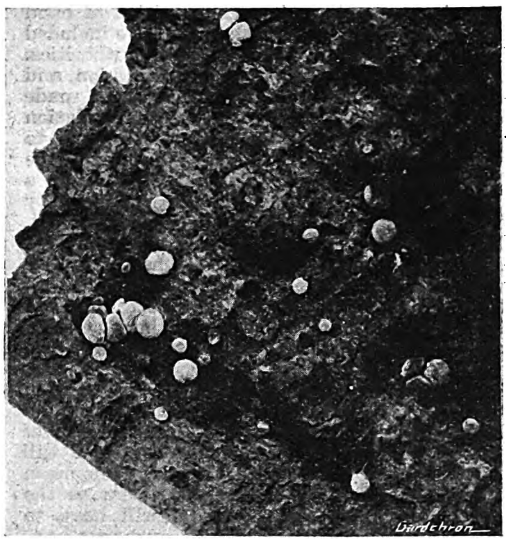

FIG. 58.—THE NEW SPECIES OF DERMATEA ON DOUGLAS FIR BARK.

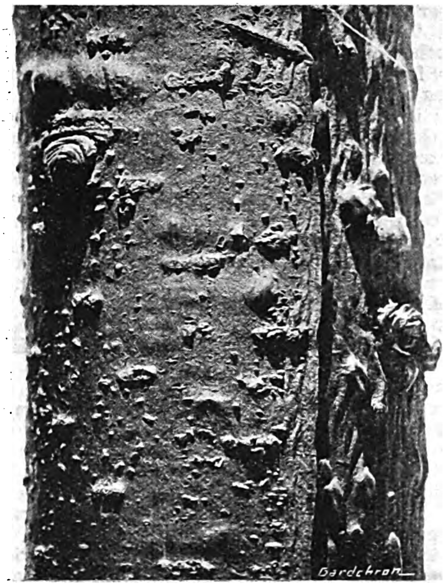

FIG. 59.—MYXOSPORIUM ABIETINUM ON DOUGLAS FIR.

THE QUALIFICATIONS OF AN IDEAL PARK SUPERINTENDENT*.

(*Continued from p.* 86).

The Park Superintendent recruited from private service will have to deal with these problems, and will find the maintenance of grass areas for games one of his most important duties. He may have been accustomed to the upkeep of lawns, where a few irregularities do not interfere with the natural undulations, and where wet spots may be avoided, but, in public parks, grass areas are for use, not ornament, and they must be level, kept mown and drained, if necessary, so as to be available during both summer and winter.

The wear and tear of these grass areas will also present special difficulties not encountered in private service. Every autumn it will be necessary to consider the best means of renovating areas which have been worn by public use in the preceding months. These will include tennis courts, cricket pitches, bowling greens, and also those areas which, although reserved for no particular game, have been used by everybody for general play and perambulation. The public are especially fond of walking on both sides of a made path if it is not fenced, and of taking direct cuts over grass land. If these tracks are not dealt with they have a tendency to widen and eventually present a grievous eyesore. The best method of dealing with these worn places is to prick them up and sow grass seeds, but although this gives the better result in the long run, turfing is undoubtedly quicker and practically a necessity for playing areas. It is found that imported turf is rarely satisfactory, and a better plan is to transfer existing turf from another portion of the park and sow down the stripped area. A turf nursery, which is a feature of many private bowling greens, is a useful adjunct to a public park, but in order to obtain good results, a knowledge of the various grasses is essential, so as to reproduce the turf which is indigenous to the park. This knowledge, although rather outside the province of the private horticulturist, will be required of a public Park Superintendent, who, in order to deal with this matter satisfactorily, must analyse his turf, and having specified and obtained his grass seeds, must then be able to satisfy himself that what he has obtained from a contractor is correct.

In connection with grass he will also require an intimate acquaintance with the various fertilisers and manures. The old-fashioned method of cutting and rolling for two hundred years will not meet the intensive use to which games grounds are subject, and the grass must be fed as carefully and judiciously as a prize Begonia. Great judgment is called for to know when to restrict play (if such a thing is allowed by his authority), and how to get the maximum use out of all grass without permanent deterioration. An afternoon's football on a wet or frosty day may work irretrievable damage, and it will be necessary to stop play under these conditions, whatever the consequences. A Superintendent's lot is not a happy one on the day games are not allowed. Great pressure will be brought to bear on him to alter his decision, he will be faced by the appeal that the visiting club has travelled for miles to play this particular match, and so on. Correspondence is likely to follow, and an aggrieved club can always produce one of its members, or some relation, who is an expert, and whose opinion invariably differs from the decision of the Superintendent. This is one of the many cases where "dealing with the public" comes into play and makes an important difference between public and private service.

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*A Lecture delivered by Mr. F. W. Parker, F.S.I., Second Officer, Parks Department, London County Council, on January 17, at a meeting of the Association of Parks and Botanic Gardens Superintendents.

The preparation of grounds for certain games requires almost expert knowledge. The upkeep of a modern bowling green is an art in itself and calls for years of experience. No half measures will suffice, as the bowler is the most critical of sportsmen. Golf courses will not come within the scope of many Superintendents, but golf putting, which can be practised on quite a small area, is extremely popular, and the ground on which it is played should be little inferior in the standard of maintenance to that of a bowling green.

Another game for which expert knowledge will be required is lawn tennis, not so much for grass courts, although they must be well maintained, as for the hard courts, which are quite recent in their introduction. The first hard court in the London County Council parks was laid down in 1920, and at the present time there are no fewer than 123. Moreover, these are of different patterns, and the Superintendent will be expected to know the merits of the different makes, so as to be able to advise his Committee when the question of introducing new hard courts is raised. Having decided upon a certain make, he will have to master the question of maintenance so as to give the best results at the least expenditure of labour, for he will probably not be granted additional staff because a few tennis courts have been added to his charge, and the ideal Superintendent never grumbles! If he is of an inventive turn of mind he will have plenty of scope for his powers, for the perfect hard tennis court has not yet been evolved, and not only the surface, but the many items that go to make up the equipment of a court are all capable of improvement. It will be a great advantage if he is a player himself; my ideal Park Superintendent will be an all-round sportsman. With this advantage he will be able to deal with the many niceties of court and field games. He will be able to appreciate the difference required in the length of grass for football and hockey. He will understand the different markings called for by the various games, and when to put out his canvas sheets on the bowling green. His cricket pitches will be the better because he realises that, when he makes a shift, as he is bound to do, the ball must not pitch on the block-hole used in the last match.

I have dwelt on these details for the simple reason that in public parks of any size the maintenance of games grounds will be found at least as important as the maintenance of a good floral display. This may be regarded as a modern development in the use of parks, and many Superintendents whose experience is lengthy will have noticed the change, perhaps with some regret. In proof of the veering of the compass from horticulture to games, I have referred to a paper on the Management and Organisation of the Royal Parks, by Col. Wheatley, Bailiff of the Royal Parks, read before the Royal Horticultural Society in June, 1901, in which he deals at length with the trees, the spring and summer bedding, and other horticultural matters. He adds, "Out of the large number of papers passing daily through my hands, I really do not think that one of them in ten has any direct relation to either horticulture or arboriculture." Not a single reference, however, is made to games, and although at the present day the Royal Parks are not to the fore in making provision for outdoor sport, they are the exception rather than the rule, and all big cities are trying to meet the demand for games.

The recent appeal by the National Playing Fields Association and the generous response which has been made to it will inevitably result in more work for the Park Superintendent.

Somewhat akin to the work connected with games is the provision made for other recreations, such as dancing and swimming. The former, once very popular, seems to be on the wane, and the work of preparing and maintaining an open-air dancing floor may not always be necessary. But no doubt other developments will arise in connection with the provision of band entertainments and concerts, which are included in the expenditure of most park authorities. Swimming is not likely to go out of fashion, and during late years great strides have been made in the amount and nature of the accommodation provided. Every known device will have to be resorted to in order to keep the water in the baths clean at a reasonable cost, and where a filtration plant is installed, the responsibility of the Superintendent is increased tenfold. He will be faced with the upkeep of complicated electrical machinery, and will have to deal with chemicals to be used with such care that an overdose may do more harm than good. His scientific attainments will have to include not only botany, but also electricity and chemistry.

One important feature which is common to most of the facilities for games and recreation is the question of charging, and the receipt of and accounting for the monies received will demand accuracy and circumspection of no mean order. In this matter, at least, so far as the actual receipt is concerned, he will have to trust subordinates and devise such methods as will eliminate fraud. The handling of money is a temptation to many people, and some painful cases reported in the press make it clear that men who have had an unblemished character for years are liable to fall. Some of the cases which have come to my notice may be mentioned. For entrance to a band enclosure, for which a small charge was made, rolls of tickets were customarily employed. The attendant made a practice of tearing off half a ticket and issuing it, and so was able to pocket half his takings. Finding that he was not detected, he began to reduce the size of the pieces torn off, until, in some cases, three, or perhaps four pieces of one ticket were given to as many persons. Someone reported the matter, sending up a small scrap of paper as the ticket issued to him. This employee had to find a fresh outlet for his energies. Another case of fraud was discovered when it was found that members of the public were being admitted without tickets. Owing to some flaw in the evidence, no convictions resulted. Excess fares for boating or games are also liable to escape being accounted for. It will be the Superintendent's duty to see that he or his authority are not defrauded, and, having received his cash, he will have to account for it in such a way as to satisfy a public auditor. No rough figures such as he might employ for his own private accounts will suffice, but very elaborate records will have to be kept, demanding accuracy in minute details, and taking time which he can ill spare from his supervisory duties. His receipts will cover hundreds of transactions in pence, for which he will have to account in bulk, so that although the total may be comparatively small, it will represent a mass of detail. Further, it must be noted that however accurately and neatly his account books may be kept, there are loopholes for fraud on the part of his subordinates, and he must not take honesty for granted, but must look into things himself. In the London County Council parks service there are fifty-two different charges, varying from 1d. to 42s. The total receipts for last year, paid by the public through the various officers in charge, amounted to approximately £40,000, spread over sixty-five places. Some idea of how the pence mount up may be gained from the receipts at Hampton Court Gardens for admission to the Vine and Maze, which total in each case about £1,000 a year. Our ideal Park Superintendent will have to include accountancy among his many qualifications.

Needless to say, a Park Superintendent, having to control many men, must be a good disciplinarian. As a head gardener in private service he would have to deal with staff, and if he has been successful, there is no reason why he should not be equally so in a public capacity but he will find difficulties which will require a good deal of tact to surmount. In many cases —and I wish to emphasise that it does not apply to all—men do not work for a public authority as they would for a private employer. However energetic they may be when they first start, there is often a falling-off as time goes on. There is a tendency to reach a common level, which is not usually the highest. A new recruit notices that many of his mates are content to do nothing in particular all day long, and that not very well, and unless he has high moral qualifications he goes with the stream and does likewise.

It is only in rare cases that a Superintendent has a free hand to engage and dismiss his staff as required, as public authorities usually retain this within their own jurisdiction. This prevents abuse of authority on the one hand, but opens the door to many other kinds of abuse. It would be an extraordinary Committee which did not contain one member with a leaning to leniency at any cost, and, except in flagrant cases, the dismissal of an unsatisfactory employee is difficult to procure. A Park Superintendent who has reported such a man finds his authority with his staff considerably weakened if his complaint is treated too lightly, and he may be reluctant to take such action a second time. Then there are difficulties with regard to the recruitment of staff. Members of public authorities, especially in these days of over a million unemployed, are continually being pressed to find work for their constituents, and they relieve themselves of the pressure by advocating the claims of the most persistent for work in the parks. There must be a few men who, in the course of their existence, have not handled a pick or shovel at some time, and this is frequently regarded as sufficient qualification for the work of a gardener. Then there are cases to which he can extend more sympathy. In the case of a large public authority with many departments there are sure to be men who break down in health or receive injuries which incapacitate them for their particular occupation. An endeavour will naturally be made to find what is regarded as "a light job in the parks" for disabled employees of other departments, and it would be un-Christian not to treat such cases with every readiness to help, but the turning of the parks into a kind of convalescent home for cripples must have a detrimental effect upon the quantity and quality of work done, and this in a service which is not too liberally supplied with labour.

(To be concluded).

FRUIT GARDEN.

RED CURRANTS.

THE Red Currant is an important fruit-producing subject, sufficiently so to warrant the use of the very best cultural methods. The fruits are largely used in tarts, they make delicious jelly, and, mixed with other fruits, they add piquancy to jams.

It thrives in a rich, deep and somewhat retentive loam, and requires a sunny and open position; quite good results are often secured from a plantation situated on a north border or similar position, but the berries from bushes so placed do not possess the flavour or colour of those culled from a warmer and more open situation.

The Red Currant may be trained into various forms; as single-, double- or triple-cordons they are quite useful and produce splendid bunches of fruits. Pyramids are easily produced, but are, perhaps, more picturesque than economical, although the berries colour well and are held well away from the ground. For general purposes bushes are the most satisfactory and economical; they should have a clean stem of six or more inches, and each bush should be allowed five to six feet of space, if the best results are desired.

Growth is usually vigorous and plentiful, and in July should be moderately thinned and shortened. The winter pruning consists of cutting the young wood on the spurs close back and shortening the main growths that have not attained the desired height.

The plantation, after winter pruning, should receive an annual dressing of farmyard manure; the ground should be lightly forked, and the manure liberally applied.

Cuttings twelve inches to fifteen inches long afford a ready means of propagation; they should be inserted six inches deep in the ground; it is important to remove the lower buds from the cuttings to form a clean stem for the resultant bush.

A large selection of varieties is not advisable, therefore only a few forms are enumerated.

Raby Castle has long bunches of medium-sized, dark-red berries; a mid-season Currant, and a fine variety for the north country. Fay's Prolific is characterised by dark-red, very large berries, produced in long bunches; it is a mid-season variety that originated in America in 1868, and commemorates the raiser. Perfection is noteworthy for its very large bunches and berries, while Prince Albert is a valuable late Currant, with large, bright-scarlet berries; this variety flowers late and possesses shining, bright green distinct foliage. La Constante is a vigorous late-fruiting variety, and New Red Dutch is a mid-season Red Currant that is much favoured for market use; the berries are bright red. Knight's Sweet Red and Houghton Castle are other estimable varieties. *R. A.*

VEGETABLE GARDEN.

MAIZE.

This, although grown in a few gardens, has not yet become popular in this country as a vegetable, except in places where a variety of vegetables are appreciated. The decorative form is grown in many gardens where sub-tropical bedding is indulged in, but we seldom see any of the new and improved varieties that are especially suitable for producing early cobs, for use as a vegetable similar to the method adopted in the United States.

Maize appreciates a good, rich soil, and a site should be chosen in a warm, sheltered portion of the garden. During winter this may be deeply trenched and enriched with well-decayed manure, if necessary.

In the north it is necessary to raise the plants under glass. If the seeds are sown any time from the middle to the end of April they will have time to provide good plants for planting out by the end of May. Sow the seeds thinly in boxes, in a temperature of from 55° to 60°. When the seedlings are large enough they may be potted singly into three- or four-inch pots, in a light compost.

In most districts, the end of May or the first week in June will be a suitable time to plant them out, but it is important that they are thoroughly hardened before being placed in their permanent quarters. The site should be well-forked previous to putting in the plants, while the distance between the rows and individual plants will vary according to the characters of the varieties grown.

A dwarf variety, like The Burpee, may be allowed two feet between the rows and eighteen inches between the plants. More robust growers require three feet between the lines and two feet between each plant. The subsequent cultivation consists of frequent hoeing, to ensure as rapid growth as possible.

In the south, seeds may be sown in the open towards the end of May. If the right varieties are sown, a crop of useful cobs is assured by the middle of September; of the varieties grown for the trial at Wisley, sown in the open on May 22, 1927, a number were ready for use by September 22. For edible purposes the cobs should be cut when fresh and green, before the seeds show signs of beginning to harden; a good stage is when the seeds are full of the milky fluid, a condition to be ascertained by opening the sheath containing the cob and examining a seed. I grew this vegetable for a number of years in the north, and found that rats were very fond of it; they would travel a considerable distance to it, and would have destroyed the crop if their raids had been unnoticed.

Varieties that gave the best results in the recent trial—seeds were sown in light, sandy soil that was trenched and manured during winter, on an open site and without the least protection, include The Burpee, Extra Extra Early, Extra Early Purity and Golden Bantam.

This list proves that a considerable advance has been made in the selection of varieties that come to maturity early, as 1927 was by no means a season favourable to the production of early vegetables. *R. Findlay, Wisley.*

RHUBARB AND ITS WHOLESOMENESS.

The remarks on forced Rhubarb by Mr. W. Auton (*Gard. Chron.*, January 28, p. 19) sets one thinking, especially now that the Rhubarb season has begun. I quite agree with him that blanching, and perhaps forcing as well, results in loss of flavour; but what would be interesting to know is whether the degree of wholesomeness of this esculent is affected by these means.

Doctors differ in their attitude towards Rhubarb. One I have in mind used to speak of it as poison! It is, at any rate, condemned generally by the medical profession for persons of a rheumatic or gouty tendency. Presumably, the deleterious property of Rhubarb is due to the oxalic acid or soluble oxalates contained in it.

The writer is unaware of any sustained research having been carried out on the acids of Rhubarb. It would be not only interesting but also hygienically valuable to know how forced Rhubarb compares with that naturally grown as regards the quantity of oxalic acid, and also how the different varieties compare one with another in this respect.

Of the common acids found in plants, oxalic is the only one that is poisonous. Malic, citric and tartaric are not only harmless but beneficial. The first of these three is, perhaps, the most widely-spread. It is pre-eminently the acid of the Apple—our most wholesome and most useful fruit. Probably the greater part of the acid of Rhubarb consists also of malic. The question is in what proportion it is mixed with oxalic? If by analysis it could be shown that Rhubarb grown under certain conditions, or at a certain period of its growth, or of certain varieties, is comparatively free of oxalic acid, some of us who are partial to it might feel more comfortable in its consumption.

We still know little as to how oxalic acid arises in the plant. That it is formed abundantly and is probably a usual product of metabolism follows from the fact that crystals of calcium oxalate are of common occurrence in plant tissues. It also looks as if the plant itself disliked much accumulation of free oxalic acid and so gets rid of it by depositing it in the form of calcium oxalate. This is a very insoluble salt and so most likely harmless in the alimentary canal. The apparent danger in consuming small quantities of oxalic acid or one of its soluble salts lies in the possibility of its being precipitated in the body as the insoluble calcium salt. Urinary calculus is often composed of oxalate of lime. It does not, of course follow that the oxalic acid has come directly from the food. It may have arisen *de novo* by means of the body's own metabolism; but there is the suspicion.

It may be that the actual leaf of the Rhubarb is richer in oxalic acid than the stalk. Towards the end of the war, when vegetables were scarce, Rhubarb leaves were suggested as a substitute for Spinach. Some who acted upon this suggestion were made very ill.

Surely the question of the wholesomeness of Rhubarb is a matter that might, from the biochemical side, be inquired into by one of our research stations. *J. Parkin.*

HOME CORRESPONDENCE.

[*The Editors do not hold themselves responsible for the opinions expressed by correspondents*].

Forced Rhubarb.—Under the heading "Forced Rhubarb," Mr. Auton asks, "Why force it without light?" and requests other growers' opinions on the subject. I have had several lady employers who absolutely refused to eat Rhubarb unless blanched; so, "needs must when the *lady* drives." Personally, I think Rhubarb is overrated as an article of diet. There was a well-authenticated case of poisoning a few years ago, through using the leaves as a green vegetable when greens were scarce; if there is enough acid in the leaves to poison a man, there is the same acid in the stalks. I know several people who dare not eat Rhubarb at all. One may eat a baked Apple or Pear, and almost any other fruit cooked, without sugar, but very few would try Rhubarb that has not been sweetened. Manufactured sugar is deleterious if taken in large quantities, as one must if consuming Rhubarb. There is less acid in blanched stalks than in those grown naturally out-of-doors or forced in light, therefore it is better blanched. *Grigor Roy.*

Blue-tits. — Your correspondents who so doughtily champion the case for the defence of the blue-tit have evidently had no experience of the destruction this little pest may accomplish. To use a Yorkshire phrase, "They know nowt about it." They glibly write of analysing the contents of the bird's crop, of watching it playing in the trees always busily employed in good works, etc. It is so easy to write of putting protecting bags, or paper collars on the Pears, and if it is hinted that the tit has visited the Pea rows, the answer is, "No, the gardener is mistaken, that's the work of the field mouse, or the jay." Possibly, if they had seen the havoc made of the Pea crop in this garden last year, their opinion of the blue-tit's habits would be less favourable. Fourteen rows, each forty feet long, were growing to produce Peas for the kitchen from August onwards, and not one bushel of usable pods were picked from them; it was pitiable to see the emptied pods hanging in profusion. The tits could only with difficulty be made to leave the rows, evading missiles by hopping into the cover and shelter of the next row. They could be seen hanging from the neck of the pods by their claws, and with their bills ripping open the covering to get the newly-formed Peas so soon as they were of the size of a pin's head. Had they been content to wait for their share of the fully-grown Peas one would excuse them, as a few Peas would then make a meal for them, and also give the grower a chance to win a few as some reward for the expense and labour incurred. If any of your correspondents could suggest any effective means of prevention it would be much appreciated; otherwise, Pea-growing in this district becomes an impossible proposition. The value of birds in general is unquestioned; this appears to be somewhat unnecessarily emphasised by your correspondents. No gardener wishes their destruction. Fruit-loving and also seed-eating birds may be circumvented comparatively easily, but in spite of paper collars and netting, the blue-tit is a perfect rogue, and if his extermination could be accomplished by voting, that vote would be quickly and cheerfully given by me. *W. S. F.*

Sowing Small Seeds.—I have seen several methods recommended for the sowing of very small seeds, but none so simple, or which gives such complete control of the seeds as the following:—Place the seeds on the palm of one hand and tap the edge of the palm close to the wrist with the forefinger of the other hand, gently incline the palm of the hand and the seeds will run off as required. Anyone may test this at their next meal with a pinch of salt. *R. R. H. Moore, Painswick Lodge, Shurdington Road, Cheltenham.*

SOCIETIES.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

At the meeting held on Friday, January 13, the members of Committee present were Messrs. J. B. Adamson (in the chair), Hy. Astley Bell, A. Burns, B. Collins, A. Coningsby, J. Evans, A. Keeling, G. V. Llewelyn, D. McLeod, W. J. Morgan and H. Arthur (Secretary). Mr. R. D. H. Wood was invited to sit with the Committee.

Awards of Merit.

Laelio-Cattleya Schröderae var. Perfect Gem, Lycaste Skinneri var. Walden and L. S. var. Towneley, from J. B. Adamson, Esq.

Cypripedium Sebastian Cabot var. Sir John Franklin, and C. Vesper var. Virginia, from Mrs. Bruce and Miss Wrigley.

Miltonia Hyeana var. Peggy, from the Hon. G. E. Vestey.

Brasso-Cattleya Dietrichiana, Llewelyn's var., from G. V. Llewelyn, Esq.

Awards of Appreciation.

Odontoglossum laudatum var. Golden Sunset, from J. B. Adamson, Esq.

Miltonia St. Andre var. Betty, from the Hon. G. E. Vestey.

Cultural Certificates.

To Mr. A. Burns, for Calanthes in variety, and to Mr. J. Howes for Odontoglossums.

Groups.

Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. A. Burns), exhibited a group to which a Gold Medal was awarded; Cypripedium Invincible, C. Carola, C. Corsair, C. Transvaal, C. Shamus var. Shaun, C. Maudiae and C. Lady Greensleeves, and Calanthes in variety were all well shown.

J. B. Adamson, Esq., Blackpool (gr. Mr. J. Howes), was also awarded a Gold Medal for a group containing Cypripedium Forest King, C. J. M. Black, C. Corsair Westonbirt var., C. Gowerianum var. Gratrixianum, C. Lady Evelyn James; Odontoglossum Arachne, and O. eximium var. Royal Beauty, and Lycaste Skinneri in variety.

Captain W. Horridge, Bury (gr. Mr. A. Coningsby), showed Cypripedium Euryades, Carter Place var., C. Sumurun and C. Carola.

The Hon. G. E. Vestey, Birkdale (gr. Mr. B. Collins), showed Miltonia St. Andre var. Betty and M. Hyeana var. Peggy.

G. V. Llewelyn, Esq., Southport, staged Brasso-Cattleya Dietrichiana, Llewelyn's var., Mr. John Evans, Colwyn Bay, showed Cypripediums, Odontoglossum ardentissimum var. Robsonae and Odontioda Carisse. Mr. D. McLeod, Chorlton-cum-Hardy, showed Cypripediums.

At a meeting held on Friday, January 27, the members of Committee present were Messrs. J. B. Adamson (in the chair), A. Burns, A. Coningsby, B. Collins, J. Evans, A. Keeling, G. V. Llewelyn, J. McCartney, D. McLeod and H. Arthur (Secretary).

Awards of Merit.

Odontoglossum eximium var. Butterfly, and O. amabile var. Eclipse, from J. B. Adamson, Esq.

Cypripedium Waratah (Euryades, Carter Place var. × *Swallow),* from Captain H. Horridge.

Award of Appreciation.

Laelio-Cattleya Zeno (C. Luegeae × L.-C. St. Gothard), from the Hon. G. E. Vestey.

Cultural Certificates.

To Mr. J. Howes, for Lycaste Skinneri, Odontioda Marjorie and Cypripedium Mrs. F. Sander; and to Mr. A. Burns, for Platyclinis uncata.

Groups.

J. B. Adamson, Esq., Blackpool (gr. Mr. Howes), showed a group to which a Gold Medal was awarded; this included Cypripedium Hebun, C. Commodore, C. Hercules, C. Perseus, Towneley Grove var., C. Roundhead, Odontoglossum eximium var. Butterfly, O. amabile var. Eclipse and Lycastes of the Skinneri section.

Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. A. Burns), were awarded a Large Silver-gilt Medal for a group of Cypripedium Maudiae (a fine collection), and many other good sorts Lycastes and Platyclinis uncata.

Mr. John Evans, Colwyn Bay, was also awarded a Large Silver-gilt Medal for Cypripediums in variety.

Captain W. Horridge, Bury (gr. Mr. A. Coningsby), showed Cypripedium Waratah and a number of home-raised seedlings. The Hon. G. E. Vestey, Birkdale (gr. Mr. B. Collins), exhibited Laelio-Cattleya Zeno, L.-C. Bletchleyensis and Odontoglossum Beatrice. Messrs. Keeling and Sons, Bradford, showed Cypripediums, as also did Mr. D. McLeod.

SALISBURY AND DISTRICT GARDENERS'.

On January 25, a very interesting lecture, entitled, "Lilies suitable for growing in a Limy Soil," was given by Mr. W. A. Constable, Manager to Mr. W. F. Gullick, of Salisbury.

The lecturer, who has been closely associated with Lilies for over twenty years, imparted much valuable information as to the particular kinds to grow, and the method of cultivation which he, personally, had found very satisfactory.

He was of the opinion that gardeners who had a calcareous soil to deal with would be well-advised to grow more of those species and varieties which take kindly to such conditions, rather than endeavour to grow such varieties as L. auratum, and many of the Californian species, which are really useless in such a soil. They would experience no difficulty with Lilium candidum, L. regale, L. chalcedonicum, L. croceum, L. Martagon, the Backhouse hybrids, L. tigrinum, L. umbellatum, L. elegans, L. Hansoni, L. Henryii, L. Szovitzianum, while of the more common kinds which would not object to lime, he suggested Lilium Farreri, L. Marhan and L. sulphur-gale.

Some exceptionally fine bulbs were on view, kindly loaned by Mr. W. F. Gullick, including some grand specimens of L. sulphureum, part of a large consignment for export to America.

Some very fascinating pictures were exhibited on the screen that had been prepared by Mr. George Dillistone, Tunbridge Wells. At the conclusion of the lecture, a vote of thanks was accorded Mr. Constable.

A fine specimen of Laelia anceps was exhibited by Mr. W. Asher, for which he was complimented.

At the meeting of this Society, held on February 1, Mr. S. W. Tucker presided over a large attendance.

Before the ordinary business commenced, reference was made to the death of the Earl of Warwick, nephew of the Hon. Louis Greville, President of the Society. On the suggestion of the Chairman, a vote of sympathy was recorded, standing, and the Secretary was instructed to write to the President, expressing the sympathy of the Society.

The Secretary reported that the Executive Council of the Wilts Agricultural Association had requested the assistance of the Society in arranging a horticultural section at the forthcoming show. A committee was appointed to deal with matters in connection with the show.

The lecturer for the evening, Mr. W. Auton, has a local connection, as he commenced his gardening career with his father, Mr. J. Auton, who was gardener for twenty years to Charles Penruddocke, Esq., of Compton Park. He is a man of wide experience and at present occupies an important position with Nitram, Ltd., a branch of the Imperial Chemical Co., investigating the subject of chemical fertilisers.

The subject of the lecture was "A Trip to the West Indies," which he made last year. Interesting lantern slides, illustrating the subject, proved most fascinating, and a considerable number of questions were dealt with by the lecturer in a masterly manner.

At the close of the meeting a hearty vote of thanks was accorded Mr. Auton.

There was an interesting exhibit of some thirty varieties of Apples, grown by Mr. W. F. Gullick, in a splendid state of preservation; the varieties shown had been selected as the most suitable for growing in the Salisbury district. Interesting specimens of various Narcissi from Spain, suitable for growing in the rock garden, were also exhibited. The Chairman expressed the thanks of the Society to the exhibitor.

NATIONAL CHRYSANTHEMUM.

In the absence of the President, Mr. E. F. Hawes presided at the Annual General Meeting of this Society, held at Essex Hall, on Monday evening last. The attendance was better than usual and gave evidence of the strong belief that the Society has now emerged successfully from the difficulties of the war and post-war periods, and will become increasingly active.

The Annual Report and Accounts were read by the Secretary, Mr. C. H. Curtis, and the former stated that none of the exhibitions at the Royal Horticultural Society's Hall, Westminster, is more popular than the one devoted entirely to Chrysanthemums, and none attracts a larger attendance. The exhibition held on November 3 and 4 last was well up to the average in extent and quality, but the lateness of the season reduced the entries of Single varieties, while Incurved blooms were few in number. The attendance on both days constituted a record for exhibitions at Vincent Square; the crush was at times, inconveniently great. The receipts at the doors amounted to £106. About one hundred novelties were submitted for the consideration of the Floral Committee. There were eight meetings, but, unfortunately, the attendance of members did not reach so high an average as usual. The Committee granted First Class Certificates to thirty-two varieties

Arrangements have been made for holding a trial of Early-flowering Chrysanthemums during 1928, and Mr. Hatch, Cookham, has very kindly consented to devote sufficient land for the purpose, and to carry out the trials free of charge to the Society. The principal end in view is the reduction of names, as the Committee is well aware that certain varieties are listed under many different titles. The trials will be inspected in due course, and at the very least, a list of too-much-alike varieties will be drawn up and published.

The Committee proposes to publish early in 1928 an "Annual" or similar publication; this will contain an audit of the flowers exhibited at the November Show, prepared by Mr. A. J. Foster; a descriptive list of the varieties that merited the approval of the Floral Committee during the past year; and lists of the best varieties in the different sections of the Chrysanthemum. This publication will be sent free to members, and there is every reason to believe it will be especially appreciated by those who cannot attend the great November show and the meetings of the Floral Committee.

The financial position of the Society continues to improve.

The dates of the November show for 1928 are November 1 and 2. The Royal Horticultural Society has offered the use of its Hall free of all charges—except those incurred for labour, and it is hoped that the November show will be held in the Society's new Hall.

The Hon. Sir John Ward, President, generously offered special prizes for the November show and again competed in the principal classes, winning the Holmes Memorial Challenge Cup for Japanese blooms for the second year in succession. It is many years since the National Chrysanthemum Society had a President so keenly interested in the cultivation and exhibition of Chrysanthemums as is Sir John Ward; on behalf of the members, the Committee expressed grateful thanks to him for his interest and generous assistance. To Mr. E. F. Hawes, Chairman of Committee; to Mr. David Ingamells, who fills the dual positions of Hon. Treasurer and Vice-Chairman; to Mr. D. B. Crane for continued service as Chairman of the Floral Committee; to Mr. R. A. Witty and Mr. J. Bayly for so kindly auditing the accounts, to all donors of prizes, to the judges and stewards, and to the trade exhibitors, hearty thanks were also offered.

Mr. Hawes moved the adoption of the Report and Accounts, the latter showing a balance of £79 18s. 9d., and a surplus of assets—amounting to £202 3s. 4d.—over liabilities. The motion was seconded by Mr. D. B. Crane, who said he believed that it was the fortieth annual meeting of the Society that he had attended, and he was delighted to find that the past year had proved such a successful one in the history of the Society.

Cordial votes of thanks were recorded to the President, Sir John Ward, and to the Officers and Committee for their services during the past year.

Sir John Ward was unanimously re-appointed President, while Mr. D. Ingamells was re-elected as Treasurer; Mr. E. F. Hawes as Chairman of Committee and Mr. Ingamells as Vice-Chairman. Mr. C. H. Curtis was also re-appointed as Secretary and Editor, and Messrs. R. H. Witty and J. Bayly were thanked for their services as Hon. Auditors and asked to act in that capacity again.

The retiring members of Committee were re-appointed, and Mr. Hatch, of Cookham, Mr. Brett, of Barnet, and Mr. M. Cole, of Peterborough, were elected to fill vacancies arising.

In regard to the proposal to conduct a trial of early-flowering Chrysanthemums, there was a brisk discussion. Mr. Hatch endorsed his previous offer to set aside a piece of ground at Cookham for the purpose, and offered to conduct the trials if the Committee so wished, as he thought it would be an excellent piece of work on behalf of the Society if the large number of synonyms of these varieties could be reduced. Mr. D. B. Crane, Mr. T. Stevenson, Mr. D. Ingamells, Mr. A. C. Bartlett and Mr. Goddard all joined in the discussion, and it was agreed eventually that a preliminary trial should be conducted this year and the full trial in 1929, as it was pointed out that a trial could only be conducted properly provided all the plants were raised on the spot and given similar treatment from start to finish. Mr. Hatch very graciously offered to conduct the trials on these lines during the present and following years, and on the motion of the Chairman he was accorded a very hearty vote of thanks for his generous offer. A vote of thanks to the Chairman concluded the proceedings.

BRITISH FLORISTS' FEDERATION.

In the absence of Mr. H. T. Mason (the President), owing to illness, Mr. D. Ingamells presided during the opening proceedings at the annual meeting of the British Florists' Federation, which was held at the Restaurant Frascati, Oxford Street, W., on Friday, January 27. There was a fair attendance of members, those present including Mr. George Shawyer, Mr. A. W. White, Mr. W. E. Wallace, Mr. H. Jolis, Mr. J. Piper, Mr. A. Dimmock, Mr. Laurence Cook, Mr. A. A. Fincham, Mr. Brook Bray, Mr. G. Woodstock, Mr. E. Stevens and Mr. H. F. Hannibal.

The minutes of the previous annual meeting having been read and confirmed, the Secretary, Mr. Charles H. Curtis, reported messages from several members who were unable to attend.

The annual report and accounts, having been sent to all members, were taken as read. The former showed, on behalf of all growers who send flowers and plants to Covent Garden Flower Market, that the Federation strenuously opposed the cleverly arranged scheme promoted for the removal of Covent Garden Market to the Foundling Hospital site. The Committee secured representation on several public and local associations which were opposed to the scheme, and entered whole-heartedly into the fight against it. The Federation was joined with the Covent Garden Tenants' Association in opposing the Bill for the removal of the Market, drew up a separate petition against the scheme, and was prepared to give evidence against it. Money was needed to conduct this opposition and a small sub-committee was appointed to apportion the sums required from the standholders and other users of the flower market. In practically every case the sum applied for was paid into the Fighting Fund, the total amounting to £740 3s. 4d. This was a splendid response, although, of course, not so large as the sum subscribed by the Fruit and Vegetable Section of the Market, which had even larger interests at stake. Fortunately, owing to the opposition presented by the combined Market interests, municipal authorities and local bodies, the Bill was withdrawn—a fine result of co-operative effort. After the withdrawal of the Bill, the Committee experienced another busy period, as the amounts returnable to subscribers had to be apportioned after the expenses incurred had been paid. An agreed sum of £250 was paid to the Covent Garden Tenants' Association as the B.F.F. share of legal expenses, but there were other expenses incurred by the Committee. However, a total of £430 was refunded—a refund that proved extremely popular, as very few of the subscribers expected any return, indeed, they feared a further call might be necessary.

Following up the scheme for an occasional display of high-class market plants and flowers, an exhibit, chiefly of Carnations, was arranged in delightful fashion by Mr. H. Jolis at the exhibition of the British Carnation Society on March 29 and 30. This display attracted a great deal of attention and favourable comment, and was awarded a Gold Medal.

The Annual Meeting and Conference of the Fédération Horticole Professionnelle Internationale was held in Geneva in June and was well attended. The British Florists' Federation was represented by Mr. H. T. Mason, Mr. W. E. Wallace, Mr. C. Englemann and Mr. C. H. Curtis. American prohibition, the International Bureau for the Registration of New Plants, a European Customs Union, Customs Tariffs on Flowers and Plants, "Dumping," Pathological Services, the need for Closer Co-operation with Government Authorities concerned with Horticulture, and many other subjects, were discussed.

Early in the year the Committee approached the Council of the Société Royale d'Agriculture et de Botanique de Gand and offered to organise a British Section at the forthcoming Ghent Quinquennial Exhibition, April 21 to 29, 1928. This offer was promptly accepted, consequently a Special Committee was appointed to deal with the matter. The Royal Horticultural Society was invited to nominate representatives of this Committee, as also was the Horticultural Trades Association. In each case the invitation was accepted and the R.H.S. promised a donation of £150 towards the expenses of the British Section. The Committee is as follows:—President, Mr. G. Monro; Vice-President, Mr. D. Ingamells; Director, Mr. H. Jolis; Secretary, Mr. C. H. Curtis; Committee, Mr. J. Artindale, Mr. J. S. Brunton, Mr. C. Engelmann, Mr. G. W. Leak, Mr. F. W. Ladds, Mr. A. W. White, Mr. M. Hutchings, Mr. W. H. Page, Mr. H. T. Mason, Mr. W. E. Wallace, Mr. W. R. Oldham (R.H.S.), Mr. T. Hay (R.H.S.), Mr. E. Laxton (H.T.A.) and Mr. L. R. Russell (H.T.A.).

The financial position of the Federation is excellent. The turnover was greatly increased owing to the exceptional circumstances, and the final result is a credit balance of £169 15s. as compared with the sum of £84 14s. 4d. brought forward from 1926. Twenty-four new members were elected during the year.

Mr. Ingamells reviewed the work of the Committee and pointed out that in view of possible alterations in Covent Garden Flower Market, all standholders had been asked to state whether they needed more space or not, and the replies had been tabulated. He expressed the thanks of the members to Mr. Jolis for his generous assistance in the arrangement of the Federation's displays at Vincent Square; urged the members to take more advantage of the work of the Market Floral Committee, and referred to the excellent service rendered by the absent President, Mr. H. T. Mason. He suggested that a telegram of sympathy and good wishes be sent him. This suggestion, together with a motion for the adoption of the report, was accepted.

Mr. Woodstock and Mr. Cook having voiced the thanks of the members to officers and Committee for their services during 1927, Mr. Ingamells proposed and Mr. A. White seconded, that Mr. J. Artindale be President for 1928. This motion was adopted unanimously, and Mr. Ingamells then vacated the chair. Mr. Artindale expressed his thanks for the honour conferred upon him, and said he would do his best for the Federation, although he knew quite well he had to follow many capable gentlemen in the office of President. The retiring members of Committee were re-elected on the motion of Mr. Piper and Mr. Dimmock, and Messrs. George Cobley and Co. were heartily thanked for acting as Hon. Auditors and re-appointed on the motion of Mr. Shawyer and Mr. Ingamells.

Mr. A. W. White then brought forward the subject of imported flowers, and stated that Dutch Tulips were coming on the market in very large numbers and were reducing the prices of home-grown Tulips to a point where little or no profit could be made. He thought it unfair that while the Dutch growers supplied the raw material—bulbs—at a high price, they should be allowed to compete with home growers by sending the finished article—flowers—to our markets. He suggested that a tax should be imposed on imported flowers to such an extent as to bring them into fairer competition with home-grown produce. He did not suggest prohibition, but simply protection for the home-grower. Mr. Ingamells seconded Mr. White's motion that the Committee should deal with this subject and endeavour to secure the imposition of a tax on imported flowers. Mr. George Shawyer, Mr. Laurence Cook and Mr. Jolis joined in the discussion and eventually the motion was carried.

After tea had been served, Sir James Slade addressed the meeting on the subject of Glass-house Rating. He pointed out that under the new re-valuation scheme no one could be expected to be assessed on the previous low valuations, because the values of every thing had altered and the cost of local government had increased as a consequence of enhanced wages and higher prices for materials. However, as glasshouses really meant intensive cultivation of the soil under cover, and necessarily meant the employment of more men than open ground, the valuation should not be excessive. Glass-houses should not be regarded on the same basis as farm buildings, but be valued upon their fair annual value to the occupier, and not upon the actual cost of building them. Excessive valuation was faulty and unfair; in his estimation, some recent valuations in Bedfordshire were far too high. Even £100 per acre was high, and the annual value of hot-water pipes and boilers should be deducted from such a figure, as these were part of the market growers' machinery.

Sir James Slade's address was ably and breezily delivered, and held the close attention of those present. Many members asked questions which he answered with a readiness that proved his wide knowledge of the subject.

Needless to state, Sir James was very cordially thanked for his address. Mr. Artindale was also thanked for presiding.

After the business, many members and friends, including ladies, dined together under Mr. Artindale's presidency. The tables were beautifully decorated, an excellent repast was enjoyed, and the speeches were interspersed with musical items. The new President, together with Mr. Shawyer, Mr. Fincham, Mr. Ingamells, Mr. White, Mr. Jolis and Mr. DuCann were the chief speakers, the last-named making an exceedingly humorous speech in response to the toast of "The Ladies."

GUILDFORD AND DISTRICT GARDENERS'.

The above Association held its New Year's Social Evening on January 25. The arrangements were made by a committee of ladies under the chairmanship of Mrs. Kinggett, and about two hundred members and friends enjoyed a varied and attractive programme.

During the interval, Alderman W. T. Patrick, J.P., welcomed the visitors and spoke of the useful work that was being accomplished by the Association in encouraging the interest of Guildford people in gardening, and urged the existing members to give every possible assistance in enrolling new ones.

KINGSTON AND SURBITON CHRYSANTHEMUM.

The Annual General Meeting of this Society was held on January 25. Mr. H. C. Gardner, of Ruxley Gardens, Claygate, presided.

The Report on the past year showed a reduced balance, and the Secretary explained that a large number of small subscriptions from Surbiton had failed to materialize, and it was owing chiefly to the generosity of the President, F. G. Wigley, Esq., that the prizes had been paid in full, while the Committee had contributed most of the balance of £5 8s. 1d. in hand.

A proposal to amalgamate with the newly-formed Kingston Gardeners' Society was carried after considerable discussion; it is hoped that increased support will be the result of this decision, and that the usefulness of both societies will be increased. The rules were amended to permit this amalgamation.

The officers were reappointed and accorded a hearty vote of thanks for their services. F. G. Wigley, Esq., President, A. C. C. Dunn, Esq., Treasurer, and W. H. Divers, Hon. Secretary, were re-elected.

It was decided to hold the next show at the Surbiton Assembly Rooms, on Wednesday, November 7. The last show was the most successful held for many years.

Obituary.

William A. Holmes.—We regret to learn that Mr. W. A. Holmes, of West End Nurseries, Chesterfield, passed away on Thursday, February 2. The deceased gentleman was sixty-nine years of age, and had been ill and confined to bed since the commencement of the year. He was a real lover of flowers and started growing them as a hobby when a boy, gradually extending his operations and building up the present business. As a successful exhibitor of decorative groups of plants he became famous throughout the country. The business will be carried on under the management of his sons—Mr. A. H. Holmes and his brother.

W. Snell.—After seventy years' experience as a forester, and retiring only when ninety years old, Mr. W. Snell, of Woodhall Spa, passed away on Friday, January 27, at the advanced age of ninety-three years. Mr. Snell was born at Beccles, in Suffolk, and when quite a young man went to Ireland to take charge of the woodlands on the Earl of Gosford's estate. Later on, he took charge of the farm at Gosford Castle, Co. Armagh, and subsequently became head forester on the estate of Col. Gascoigne, Parlington Park, Leeds, where he remained for sixteen years. His next position was that of forester to the late Mr. John Hodgson of Nocton, where he remained until his ninetieth birthday, acting on behalf of the Dennis family. Three years ago he retired to Woodhall Spa. At the funeral which took place at Nocton there were abundant evidences of the very high respect and deep affection in which Mr. Snell was held. Mr. Snell leaves three daughters and one son to mourn his loss; the son, Mr. John Snell, is gardener to Sir John Harrison, Bt., Woodside Hall, Durham.

F. J. Thorne.—We deeply regret to learn of the death of Mr. F. J. Thorne, which occurred at Windsor Hospital on January 20. Mr. Thorne was seventy-one years of age, and spent forty-two years of his life at Sunningdale Park, where he was gardener to Sir James Mackenzie and subsequently to Major and Mrs. Joicey. He was largely responsible for the design of the beautiful gardens in which he took so much pride and of which he was immensely proud. He was not only a clever designer, but he had a wide knowledge of hardy shrubs and other outdoor subjects, and was an equally clever cultivator of Orchids, and used to exhibit these frequently at meetings of the Royal Horticultural Society. The funeral took place at Sunningdale Church, where Mr. Thorne had been a sidesman for many years, and where he invariably took charge of the floral decorations at the special church festivals. The remains were carried to the grave by six of the gardeners who had worked under him at Sunningdale Park, and there were ample evidences at the service of the very great respect in which the deceased gentleman was held.

Ludwig Beissner.—We regret to learn of the recent death of Herrn Ludwig Beissner, formerly Inspector of the Bonn Botanic Garden, at the advanced age of eighty-four. He was equally celebrated as a practical gardener and a writer on horticultural and botanical subjects, especially that of trees and shrubs, his handbook of Conifers having attained the rank of a classic. The son of a gardener, he was born on July 6, 1843, in Mecklenburg-Schwerin, and after a varied gardening career, he was appointed in 1882 to the post of Inspector of the Brunswick Botanic Garden, receiving his final appointment at Bonn in 1887. He retired on a well-merited pension in 1913. He received many honours, among them the rank of "kgl. Oekonomierat," and made many friends, notably among the students at the Bonn-Poppelsdorf horticultural school, where he taught gardening subjects.

ANSWERS TO CORRESPONDENTS.

Brown Colour on Parsnips.—*H. E.* The upper part of Parsnips often becomes dirty-brown or rusty-brown in colour through a variety of causes. Aphides or green fly sometimes multiply freely on the crown of the roots, but may be destroyed by dusting the infested parts with Tobacco powder and leaving it there. Occasionally the roots are attacked with Psila rosae (Carrot Fly), and the maggots turn the skin rusty. A good antidote to this is to trench the soil rather deeply in the autumn, putting the top spit in the bottom, and leaving the surface in rough ridges. The Parsnips should be thinned to three inches apart when only one inch high, to leave as small holes as possible near the roots that remain. Next, water the Parsnips with a handful of Peruvian guano stirred into a gallon of water. This assists quick growth, and the odour helps to keep the mother flies away. Mites may sometimes injure the skin, but deep cultivation in autumn does much to clean the ground.

Bignonia, Tropaeolum and Magnolia.—*R. J. S.* The plants you mention may be planted now, in fact, any time up to March, but the sooner they are planted the better chance will they have of becoming established before possible dry spells arrive. The Bignonia requires the most sunny position you can give it, while the Magnolia should succeed on your south wall. Tropaeolum speciosum is not likely to do on a south wall, as in the south it requires a cool position and partial shade at the roots. You should try planting it among bushes. In Scotland it will grow over Yews; in fact, it often has to be pulled off them, and it is commonly seen trailing over evergreen hedges and bushes, and trained up walls. We have also seen it running riot among clumps of Rhododendrons. A cool, moist atmosphere seems to be essential. You should give it a good start by mixing plenty of well-decayed leaf-soil with the compost when you are planting.

Fruit Store.—*L. S.* Still air has a very high insulation value, but air which can circulate, as it may between double walls, has a relatively low value. Circulation can, however, be checked to a large extent by tightly packing between the walls some material which will hold the air in a multitude of small spaces. Straw would probably be better for this purpose than saw-dust, because the latter is more likely to become damp. Saw-dust is a poor ventilator unless kiln-dried before use and placed where it cannot become damp. Every effort should be made to render the walls quite waterproof.

Names of Fruit.—*D. S. F.* Paradise Apple, a variety of no particular commercial value.—*W. G.* 1, King of the Pippins; 2, Winter Quarrenden; 3, White Nonpareil; 4, Bramley's Seedling; 5, Newton Wonder; 6, Egremont Russet.—*Altho.* 1, Emperor Alexander; 2, Beauty of Kent; 3, American Mother; 4, Brownlees Russet; 5, Golden Harvey.

Names of Plants.—*H. E.* 1, Impatiens Sultani; 2, Epiphyllum truncatum; 3, not recognised; send in flower; 4, Helxine Soleirolii.

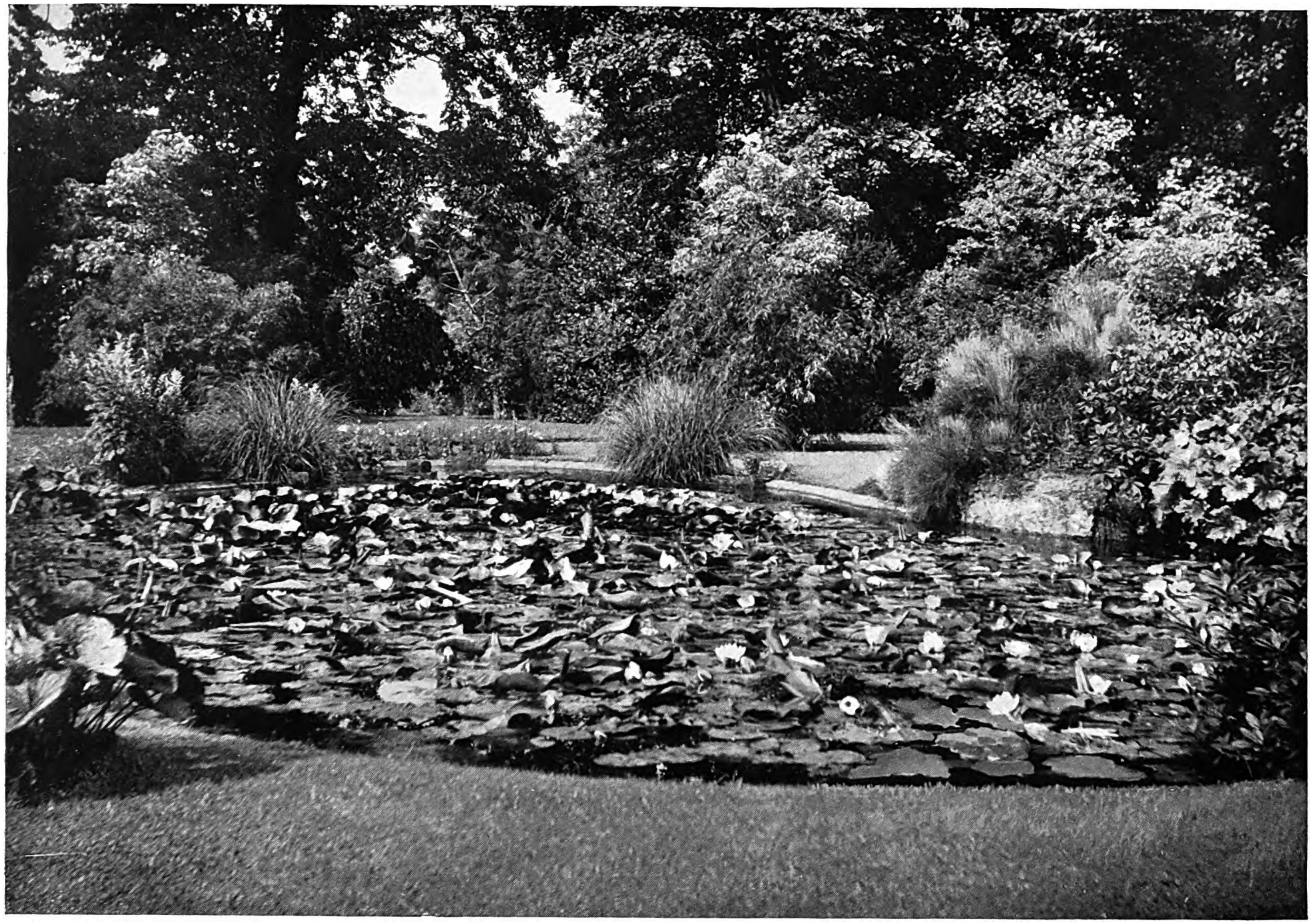
Peach and Nectarine Trees.—*C. B.* Your best course is to syringe the trees with Quassia extract, and cover them with nets to keep away bullfinches; do not erect the glass frames over the trees until just before the flowers begin to expand, thus retarding the opening of the flowers for so long as possible.

Propagating Ericas.—*H. J. R.* Ericas hyemalis, nivalis and gracilis, are propagated by means of cuttings. E. gracilis may be increased by sowing seeds of it, but the variety nivalis and the hybrid Heaths should, of course, be increased by means of cuttings. August and September is usually regarded as the best time to take cuttings, but they may be as successfully propagated in springtime during March. Beginners usually make the mistake of taking large cuttings. Small, twiggy shoots about half-an-inch in length, give the best results. They should be selected from shoots that have finished growing. Great care must be exercised in preparing them. When trimming the cuttings, do not tear the bark; with a little practice the fine leaves can be quickly rubbed off with the finger and thumb. The cuttings may be dibbled into pots of sandy peat and made very firm. The pots should be half filled with crocks, covered with fibrous peat to ensure perfect drainage. The surface of the soil should be covered with a layer of clean, silver sand. The cuttings, when inserted, should be carefully watered with a very fine-rosed can, and then stood under bell-glasses in a cool greenhouse. The glasses should be removed and wiped every morning. It is best to use small pots, large sixties or forty-eights being suitable. On a large scale, the cuttings may be put into boxes or pans.

Vines in Greenhouse.—*J. B. D.* The chief cause of failure to colour your Grapes is that you overcrop the vine; in the course of a few years you will exhaust it. If you reduce the number of bunches to forty or fifty, this would still be a very heavy crop, but you would gain in the end by having larger bunches and berries of better colour. Horse-manure is better for top-dressing than cow-manure; the latter excludes air from the border. Continue the dressing of lime and give three dressings of sulphate of potash, two ounces to the square yard, during the season—one in November, one at the end of March, and the third so soon as the berries begin to change colour. This should have the desired effect if you water the borders sufficiently.

Weed on Lawn.—*J. S. T.* The weed on your lawn is Prunella vulgaris (Self-Heal), a difficult plant to eradicate. The more closely the lawn is mown the more closely it lies down on the soil. It spreads by runners, and if the grass were allowed to grow fairly rankly in spring, it would be easier then to cut the plant at the centre just below the soil, and pull up the pieces. Another plan would be to cut the running stems, first one way and then the other, with an edging iron, and then rake up the pieces with an iron rake, or pull them up by hand. When the weather becomes settled and dry, and the plants commence to grow, in March or April, the remaining pieces could be thickly dusted with lawn sand. Some of the stronger pieces may grow again, and the dusting should be repeated after the dew is off the grass. It would take little time to root up this weed, if you were to look over the lawn from time to time and pick out the small pieces so soon as they appear.

Communications Received.—L. O.—A. H.—F. R. —G. A.—H. G.—W. F. R.—J. C.—T. H. E.—H. E. D. —A. G.—F. E.—J. W. L.—H. D. M.—F. J. S.— H. J.—R. A



NYMPHAEAS AT BLYTH HALL.

THE Gardeners' Chronicle

No. 2147.—*SATURDAY, FEBRUARY* 18, 1928

CONTENTS.

Afforestation and small holdings in Scotland 112
Alpine garden—
  Androsace sarmentosa 119
  Gentiana septemfida 119
  Helichrysum frigidum 118
Birds and fruit ... 125
Books, notices of—
  Botanical Magazine 112
Bulb garden—
  Crocus Sieberi ... 119
Celery, protecting ... 125
Chimonanthus fragrans 125
Flower garden—
  Fumitories 118
  Saponaria Vaccaria 118
Fruit garden, the market 124
"Gardeners' Chronicle" seventy-five years ago 113
Ghent Floralies ... 112
Hardy flower border—
  Herbaceous perennials from seeds... 118
Hieracium villosum ... 125
Indoor plants—
  Cotyledon japonica 116
  Drymoglossum carnosum var. minor 116
  Saintpaulia ionantha 116
  Veltheimia viridifolia 116
Irish horticultural journal 113
Iron as a plant tonic... 125
Lander, Mr. H. ... 112
Mesembryanthemum . 123
Montbretia rosea ... 125
Obituary—
  Beckett, A.... ... 128
  Camp, Wm. ... 128
  Paul, Arthur W. ... 128
Park superintendent, the qualifications of an ideal 122
Primula, the genus ... 120
Primulas, Burmese, in 1926 122
Rose garden—
  Climbing Roses ... 118
  Mulching Roses ... 118
  Rose American Pillar 118
Royal Horticultural Society 111
Sea-water tests of Sisal and Manila fibres ... 113
Societies—
  Guildford and District Gardeners'... 128
  Royal Horticultural 126
  Spalding Bulb Growers' ... 128
Stuttgart Park ... 112
Superphosphate and Seeds 125
Trees and shrubs—
  Buddleias 117
  Symphoricarpus orbiculatus ... 117
Trees and shrubs, planting, in early spring... 116
Vegetable garden— ...
  The Cabbage ... 125
Week's work, the ... 114

ILLUSTRATIONS.

Androsace sarmentosa 119
Cotyledon japonica 116
Drymoglossum carnosum var. minor 115
Gentiana septemfida 117
Glottiphyllum regium 123
Lander, Mr. H., portrait of 112
Primula serratifolia 121
Rose American Pillar 113

SUPPLEMENT PLATE.

Nymphaeas at Blyth Hall.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 33·8°.

ACTUAL TEMPERATURE.—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London, Wednesday, February 15, 10 a.m. Bar. 30·1. Temp. 54°. Weather, Dull.

Royal Horticultural Society. ON the eve of a century-and-a-quarter of existence the Royal Horticultural Society enters on one of its "red letter" years, and the Council's Report for the year 1927, which, in anticipation of the Annual General Meeting, was circulated amongst the twenty-five thousand Fellows, has a special interest to those who prefer to take stock before considering the future. After having briefly recorded an increase of over sixteen hundred Fellows during the year under review, the Report continues in rather a depressed tone. There follows the obituary paragraph and an apology. The former is generally a sad necessity in the annual reports of all Societies and Associations which have any material membership. The present list of those who have done good work, but are no more, includes the names of Sir John Llewelyn, a Vice-President, who must have been one of the oldest of the Society's Fellows; Dr. B. Daydon Jackson, who also was connected so intimately with the Linnean Society; Professor C. S. Sargent, whose name will live evermore in America; Mr. G. F. Moore and Mr. H. T. Pitt, so well known in the Orchid world; Mr. G. Mount, the Rosarian; and Mr. William Pope, who was better-known in the nursery trade than in private gardens. The New Hall, which revives in many of the older Fellows memories of the long discussions which preceded the building of the present Horticultural Hall has, with the increased membership, become a necessity, and all who desire the Society's welfare must hope that it will prove a successful and profitable venture. For the moment it is dealt with in the Report in a short paragraph of apologetic nature, but we have no doubt that the Council is reserving itself for the time when the opening date may be announced. The same inclement weather which has been the despair of gardeners has also had an adverse effect on the speed of construction of the New Hall, but it is to be hoped that, with longer days, will come improved weather, when construction will speed up. In connection with the New Hall we feel that this is a fitting opportunity to refer to the evidence of the Society's good will towards "Kindred Societies" during the year under review, when the Council intimated to the various Secretaries of the special flower Societies that it proposed in future to grant the use of either hall, for the purpose of holding annual shows, free of rental. This generous gesture has been immensely appreciated by the Societies concerned. In connection with the Society's London establishment, the retirement of Mr. Frank Reader is probably a more important milestone in the Society's history than most realise. He has been intimately associated with its inner workings almost entirely throughout its period of success. Readers of *The Gardeners' Chronicle* are already aware of our personal feelings, built on a long friendship, towards Mr. Frank Reader, and we feel sure they will join us in extending the best of good wishes to his successor, Mr. F. A. Streeter, who has had the advantage of serving under Mr. Reader for a considerable period. Fellows who are interested in the scientific side of horticulture will appreciate the new appointment at Wisley of a Keeper of the Laboratory. Mr. M. A. H. Tincker comes from the Department of Agriculture, Aberystwyth University. His special charge is the supervision of research work and science-teaching at Wisley, and all Fellows will confidently expect that this addition will strengthen the scientific and practical usefulness of the Society. We are pleased to learn that "Dr. Darbishire is continuing his work upon green manuring and, with Mr. Buxton, on the reaction of sap, and its influence on flower colour." Mr. G. F. Wilson has published in the *Journal* an account of the insect pests of Water-Lilies, and is continuing his studies of the diseases of bulbs, of eel-worms and other plant pests. In furtherance of its policy of extending its scientific operations, the Council has established a research scholarship, and it is expected that the first holder will apply himself to investigations in bulb-growing, and especially in continuing the work of the late Mr. J. K. Ramsbottom. We are especially pleased to learn that a memorial to our late colleague has been placed in the hall of the Laboratory. The many lovers of new and rare plants will find especial interest in the paragraph of the Report on "Expeditions," and will look forward to the promised distribution of plants raised from seeds collected by Mr. Comber in the Andes, and by Mr. C. Bennett, on Mount Garibaldi in British Columbia. Those who have seen the photographs taken by Mr. Comber are already acquainted with the general appearance of many of his "finds," and know how widely he searched. The more practical side of horticulture also receives mention in the Report. The new alpine house and range of garden frames have fulfilled expectations, and the exhibition room which has been provided for the display of seasonal fruits and other produce should be a great convenience to visitors. The trials of garden plants, which are such important work of the Society, are to be continued with a goodly list of subjects and should prove to be most valuable to horticulture. The Report also contains the customary records of the various shows held during the year, reference to future Conferences and exhibitions, and the awards of the various Cups and Medals. Although stove and greenhouse plants have lost much of their former importance in our gardens, lovers of these subjects will be interested in the "Commemoration Cup," which has been instituted to commemorate the opening of the New Hall, and is to be offered at Chelsea this year for the best collection of stove and greenhouse plants arranged within a defined area. We imagine that this is to be a Perpetual Challenge Cup, but it is not so defined. The revised Charter and Bye-Laws of the Society, adopted by the Annual Meeting of Fellows on Tuesday last, give the Council somewhat wider powers than hitherto, but do not in any way adversely affect the rights and privileges of the Fellows.

Our Supplement Plate.—Where opportunities serve, the cultivation of Water Lilies adds greatly to the interest and beauty of a garden. Some of the most delightful garden pictures are created by Nymphaeas, suitably placed and cared for, and one such picture, at Blyth Hall, Rotherham, Nottinghamshire, is shown in the Supplementary Illustration presented with our present issue.

Help for the Gardeners' Royal Benevolent Institution.—Mr. C. H. Cook and the staff of the Royal Gardens, Windsor, held their second social evening this winter in aid of the Gardeners' Royal Benevolent Institution, on February 9, at the Guildhall, Windsor. The effort was a great success, and besides being a most enjoyable function, the Institution will benefit to the extent of about £30. The success of the evening is in a great measure due to the untiring energy of Mrs. Cook and the wives of the staff at Windsor, who provided and served refreshments to over three hundred people. The previous effort, in December last, yielded nearly £40.

Oil Fuel for Glasshouses.—We learn, from *The Fruit Grower*, of an interesting system of glasshouse heating that has been employed with success by Mr. E. E. Gayler, of Enfield. The coal strike of 1926 was responsible for Mr. Gayler's action in installing this method of heating in several large houses, each with an average capacity of 34,000 cubic feet, that are used for the production of such marketable produce as Smilax, Richardias, Stephanotis and Asparagus plumosus. He first discovered a good oil burner in Blakeney's patented oil burner, and then fitted a small tubular boiler to it; upon this proving successful, Mr. Gayler then proceeded to link up five other boilers. To secure the necessary air-pressure a 1½ h.p. Petter engine was installed, and then a tank capable of holding 1,000 gallons of crude oil. Above the burners, which are fed by gravitation, a small oil tank was placed, while the remaining outlay consisted of the fitting of each boiler with oil burners and oil and air piping. In all, the cost of the installation, including one burner, was about £130. Mr. Gayler discovered that varying temperatures could be maintained with ease, while the admission of air reduces oil consumption to a minimum. No trouble regarding the choking of burners has yet been experienced, while they may be regulated and then left for the night without further attention. From one boiler 3,400 feet of 2-inch piping is heated, and in dull weather a temperature of 60° is maintained. To secure this, less than two gallons of oil is used per hour, while an increase in the supply of a quarter-gallon per hour will result in a rise of 10° in the temperature. With regard to the cost of this method of fuelling, Mr. Gayler states that the present price of crude oil is 3⅞d. per gallon; in twenty-four hours approximately 48 gallons of oil were used, roughly 15s. worth. The price of coal, to maintain a similar temperature for the same period of time, if anthracite were used, was estimated at about 26s. This comparison applies to the same area of piping. It is suggested that among the advantages derived from the use of oil fuel are: reduction or abolishment of coaling; and the elimination of stoking and the removal of clinkers. It is suggested that the Petter engine might fail at short notice with dire results, but this could be guarded against by installing a duplicate engine or, better still, an electric dynamo. Mr. Gayler is very enthusiastic over his oil system, and we learn that a number of prominent growers in the Lea Valley have expressed their approval of it after seeing it in operation.

Stuttgart Park.—Visitors to Stuttgart will remember the beautiful Rosenstein Park, with its fine view, and will be glad to know that the idea at one time mooted of turning it into a Zoological Garden has been abandoned. A fresh menace to its amenities has now, however, arisen, in the shape of a plan to erect in the park a technical high school. Such a proceeding would inevitably destroy the secluded and peaceful nature of the park, and the local horticulturists, as well as many other residents of Stuttgart, are up in arms against the proposal.

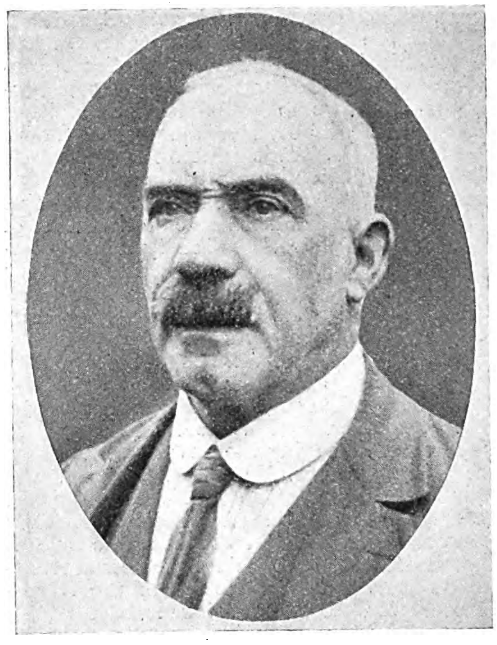
Legacies to Gardeners.—The late Mr. F. L. Moorhouse, of Glion, Huddersfield, bequeathed £100 to his gardener, Mr. J. W. Lilley.—The late Mr. T. C. Willders, of Bleak House, Holbeach, left £150 to Mr. T. M. Tarrington, his gardener.

Ghent Floralies.—Preparations for the Ghent Floralies in April next are proceeding apace, and the organising Committee has planted two of the lawns in the park with bulbous plants, transforming them into beds of Tulips and Hyacinths. A record number of visitors is expected, and as many of these will arrive in automobiles, a vast parking place is being provided, where not only space for the motors, but petrol, tyres, accessories, etc., will be obtainable.

Afforestation and Small Holdings in Scotland.—About two years ago the Forestry Commission instituted a scheme associating the work of afforestation with the setting up of small holdings for their employees. These latter are only guaranteed six months' work each year, and the Commission felt it desirable, so as to retain the services of competent men, that other work should be provided during the lay-off period. This is being most successfully accomplished in the north-east of Scotland by the placing of workers on small holdings varying in size from six to ten acres. So great, indeed, has been the demand for these small holdings that the main difficulty confronting the Commission is to find places for the many applicants. That this should be so may be well understood when it is stated that each successful applicant is provided with a comfortable, up-to-date, four-roomed house, six to ten acres of land, and a guarantee of six months' work each year on the plantations, but many of the workers are engaged during the whole year in afforestation work. The potentiality of each holding is carefully studied and the lay-out arranged accordingly. Fruit-growing has been favoured by many of the small-holders, and these have been assisted through the provision by the Forestry Commission of plants and bushes. There are many extensive afforestation schemes in progress in the north of Scotland at the present time, and in the vicinity of the majority of these small holdings have been instituted. Near Huntly, Aberdeenshire, on the Richmond-Gordon estate, some 5,000 acres are being planted while a few miles away, between Pitfour and Lenabo, another 2,000 acres are in hand. Nearer Aberdeen, at Kemnay, an extensive stretch of countryside is being put under trees. Drumtochty, so eminently associated with the name of Mr. Sydney J. Gammell, the well-known authority on forestry, and now of Countesswells House, near Aberdeen, has in hand 2,000 acres. At Tentsmuir, in Fifeshire, 4,000 acres are being afforested, all in the north-east of Scotland. In a very short period some fifty small-holders will have been settled, all living in comfort, and paying but a nominal rent for their houses.

Royal Horticultural Society of Aberdeen.—Mr. J. B. Rennett, Secretary of this Society, has just issued the prize schedule for the annual exhibition, to be held in the beautiful public park of Hazelhead, on August 16, 17 and 18, by kind permission of the Aberdeen Town Council. The classes number two hundred in all, and embrace a comprehensive range of competitive sections. The last day for receiving entries is August 9.

Mr. H. Lander.—Mr. H. Lander, Head Gardener at Lister Park, Bradford, is a well-known figure in the city of Bradford, and has been associated with the Corporation for fifty years. He commenced his gardening career at an early age on the staff at Horton Park, Bradford, under his father, who was then head gardener. When twenty-six years of age he succeeded his father in this capacity, and nine years later was appointed to take charge of Lister Park, one of the most popular open spaces in the city. During his twenty-eight years of service, Mr. Lander has carried out numerous alterations and been responsible for the construction of several recreation and pleasure grounds in the district. In addition to his other duties, Mr. Lander is the Recording Officer of the Meteorological Station, which is one of the features of Lister Park, and is directly connected with the Air Ministry. This station was established in the Park in 1908, having been transferred from a private firm. He was elected a member of the Royal Meteorological Society in 1918. Mr. Lander is retiring in October and we join with his many friends in wishing him many years in which to enjoy a well-earned rest.



MR. H. LANDER.

Richmond Hill View.—The London County Council Parks Committee has, we understand, recommended that the Council should contribute one-sixth, or a maximum of £500, towards the purchase of Haversham Grange, Twickenham, which is to be carrried out in order to preserve the view of the Thames Valley from Richmond Hill.

Honour for Country-House Architect.—A Royal Gold Medal has been awarded to Mr. Guy Dawber, A.R.A., P.-P.R.I.B.A., who has filled the office of Hon. Secretary to the Royal Institute of British Architects for seven years, and has been President. Mr. Dawber is well-known as the creator of many pleasing country houses, but he has had extended and varied experience in other directions, and one of his larger works is the Lord Wandsworth Agricultural College at Long Sutton, where much work is at present being done in the form of new hostels, etc.

Nursery Thieves in Berlin.—Shortly before the New Year there was an outbreak of theft from nurseries in the neighbourhood of Berlin, and just lately further numerous robberies have taken place. One nurseryman alone, in Heinersdorf, had four hundred Rose trees stolen from his establishment.

The "Botanical Magazine."—We have recently received Part 2 of Vol. CLII (1926) of this classical work, which continues to uphold the high standard of quality and accuracy that has always been associated with it. This publication contains beautiful illustrations, interesting observations on, and lucid descriptions of twelve rare plants, several of which may possibly become popular in this country in the future. The plants so dealt with are Venidium fastuosum, t. 9127, Pleurothallis (?) ophiocephala, t. 9128, Prunus cantabrigiensis, t. 9129, Celsia bugulifolia, t. 9130, Abelia triflora, t. 9131, Rhododendron Kotschyi, t. 9132, Erica Pageana, t. 9133, Photinia prionophylla, t. 9134, Colchicum cilicicum, t. 9135, Calystegia tuguriorum, t. 9136, Erythraea scilloides, t. 9137, and Primula pinnatifida, t. 9138. Venidium fastuosum, a native of South Africa, is identical with Arctotis fastuosa, Jacquin. The first record of its cultivation in this country is by Aiton, who stated that it was grown at Kew from seeds collected by Masson in 1795, but it is apparently impossible to verify this statement. In 1865 it was collected by Andrew Wyley and described as Venidium Wyleyi, since which date it has been collected frequently. It was in cultivation at Kew in 1901, while the subject of the illustration was supplied by Mr. T. Hay in 1925. It is an annual, with branching growths sparsely clothed with irregularly lobed leaves, from the axils of which the flower stems, bearing rich orange, Composite flowers, are produced. Pleurothallis (?) ophiocephala is a quaint Orchid from central and southern America, but little is known of its natural distribution. It has been grown at Kew for many years, under conditions similar to those afforded to Masdevallias. Prunus cantabrigiensis is a beautiful flowering Cherry from China. It is a straggling shrub, with slightly hairy, greenish or red-tinted growths which become steel-grey with age. The leaves are ovate-elliptic, acuminate, coarsely doubly dentate, while the flowers, that are produced profusely in subsessile racemes, are rich rose-coloured in bud, fading to pale rose or white with maturity. They are followed by bright red fruits, similar in appearance to, but rather larger than, the British Wild Cherry. Celsia bugulifolia, of the Natural Order Scrophulariaceae, is closely related to the Verbascums and was known so long ago as 1701, although the first record of its introduction to cultivation dates back to the latter end of last century, when it was raised at Baden-Baden by Max Leichtlin, from seeds received from Constantinople. It is a hardy perennial with a fleshy, seldom-branched tap-root, variable leaves, and erect stems terminated by stiff racemes of quaint, greenish-yellow, purple-veined flowers. Abelia triflora, from the Himalaya, was discovered about one hundred years ago by R. Blinkworth, and has twice been described in *The Gardeners' Chronicle* (1860, 1881). It is a highly ornamental shrub, easily propagated by cuttings of either the young growths taken in summer, or of mature growths inserted during the autumn. Its clusters of narrow-tubed flowers are white, sometimes tinged with rose. Rhododendron Kotschyi, a native of south-eastern Europe, has numerous synonyms, and is apparently the Transsylvanian form of R. ferrugineum of the Alps. It is distinguished from this species by its smaller stature, by smaller leaves with finely crenate margins, by a narrower and loosely-downy corolla tube, and by the stamens that are completely enclosed by the corolla-tube, while the flower itself is of a clearer rose colour. R. Kotschyi is grown in the rock-garden at Kew, where it flowers freely every year. Erica Pageana was regarded in the past as a robust form of E. campanulata. In South Africa, of which country it is a native, it is popular as a cut flower during September and October, its natural season of flowering. It is one of the yellow-flowered species, forming an erect, much-branched shrublet, and is a vigorous grower. Photinia prionophylla is a rare shrub from China, forming with P. berberidifolia a distinct group within the genus Photinia. It was first collected by the Abbé Delavay in 1888, although its hardiness in this country has yet to be proved. It is an evergreen shrub, with oblique or semi-prostrate, greyish-downy branches, numerous obovate, acute, sharply-serrated leaves, and terminal corymbs of small, white flowers, that are succeeded by oval, rich-crimson fruits. Colchicum cilicicum was well illustrated and described in *The Gardeners' Chronicle* in 1898 (Vol. XXIII, p. 34, Fig. 12), and again, under the name of C. Decaisnei, in 1916, while it is often grown and sold as C. byzantinum. It is a free-grower and flourishes under conditions similar to those afforded other Colchicums; it produces its broad, corrugated leaves during April or May, and its slender, rose-lilac flowers during October. Calystegia tuguriorum, from New Zealand and Chile, is a Convolvulus-like plant that was discovered on Cook's first visit to New Zealand in 1773, while Hooker also suggested its occurrence in Chile. It is a perennial twining plant, with slender growths, solitary, white, green-throated flowers, and dark-green, ovate leaves. Erythraea scilliodes is a dwarf perennial that well deserves a place on the rock garden. Its synonyms are numerous, perhaps the best-known being E. Massonii and E. diffusa. Primula pinnatifida, from China, belongs to the Muscarioides group of this genus. It was described in *The Gardeners' Chronicle* in 1912, and was first discovered by the Abbé Delavay in 1884. It is a charming alpine plant, beautiful both in foliage and blossom.

An Irish Horticultural Journal.—In our issue of January 21st, we published an announcement of the intended publication of the *Irish Gardener and Horticultural Review*, a monthly magazine for practical horticulturists and cottage gardeners. We have now received the first issue and wish the producers of it every success. Although of necessity limited, it contains much useful information and displays a cheery optimism in the face of the numerous difficulties that naturally surround a venture of this description. Such optimism deserves to be rewarded, and we hope to see this Journal take a prominent place in the history of Irish horticulture. The subscription is 3s. per annum.

Sea Water Tests of Sisal and Manila Fibres.—Tests of an unusual character have been made to determine the relative values of Sisal fibre and Manila fibre for ropes. It is stated that two Oak chests, perforated to admit the sea-water, and containing considerable quantities of Sisal Hemp and Manila Hemp had been fastened to the end of the Southend (Essex) pier for a considerable time. A deputation appointed by the Imperial Institute has now examined the two samples of Hemp and found that the Sisal rope, which is a British produce, is fully equal to the Manila, which comes from American dependencies.

Ken Wood Pictures at the Royal Academy.—The pictures which are to find a permanent home in the Art Gallery in Ken Wood Gardens (which, as announced in our issue of November 5, 1927, p. 358, is to form a part of the late Lord Iveagh's munificent bequest to the nation) are now on view at the Royal Academy, Burlington House, W., awaiting the time when their permanent home will be ready for their reception. This collection includes some of the finest art treasures of the nation, such as Romney's well-known painting of Lady Hamilton at the spinning wheel, a beautiful self-portrait of Rembrandt in his later years, and Gainsborough's brilliant and lovely scene entitled "Going to Market." There are few landscapes in the collection, and apart from the inestimable art value of these masterpieces, they have no very special or peculiar appeal to lovers of the garden or of nature, a great number being portraits. There is one, however, a François Boucher canvas, which depicts an orchard, with a man and a girl gathering Cherries from a tree; a stone slab holding pot plants and a wheelbarrow and watering-can in the foreground show that the painter was acquainted with the practical side as well as the picturesque value of the garden. In another Boucher example, "Flower Gatherers," the flowers are conventional and stiff, and the whole conception of the picture romantic rather than natural, the landscape being entirely subordinated to the human element. Flower lovers who visit the Iveagh pictures will also linger with pleasure and interest in the South Rooms, where there is a collection of paintings by the late Mark Fisher, R.A. These are almost all redolent of the open air and of the countryside, and the still life groups include flowers which must be loved to be so cleanly and clearly depicted. It is difficult to pick and choose among so much that is excellent, but one lingers with especial pleasure beside "Almond Blossom," "Apple Blossom and Sheep in Orchard," and "The Artist's Garden."

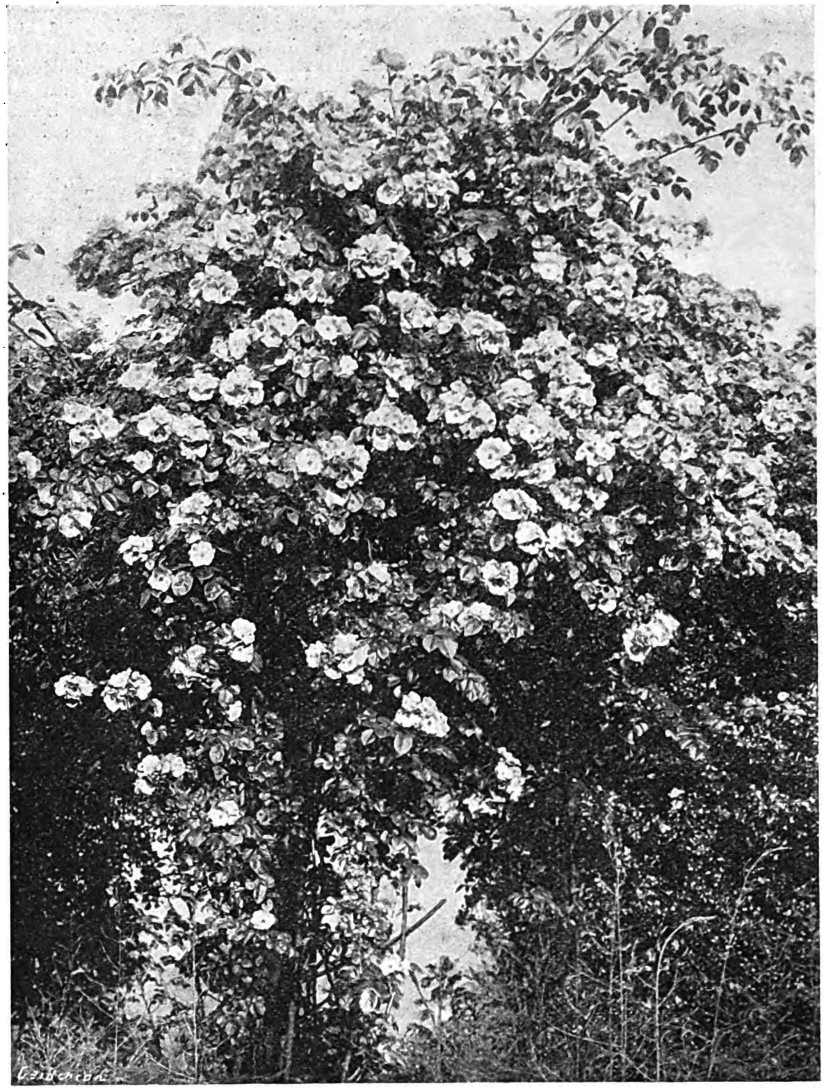


FIG. 60.—ROSE AMERICAN PILLAR.

(see p. 118.)

Appointments for the Ensuing Week.—Monday, February 20: Birmingham Gardeners' Mutual Improvement Association's meeting. Tuesday, February 21: Winchester Horticultural Society's meeting. Wednesday, February 22: London Gardens Guild Lecture; Wimbledon Gardeners' Society's meeting. Thursday, February 23: Bideford Horticultural Society's meeting; Paisley Florists' Society's meeting. Friday, February 24: Manchester and North of England Orchid Society's meeting; East Anglian Institute of Agriculture lecture. Saturday, February 25: Lancaster Horticultural Association's meeting.

"Gardeners' Chronicle" Seventy-five Years Ago. — *Pineapple-flavoured Grape.* — Perhaps some of your readers will kindly inform me if there is to be found in this country a black Grape, with the full flavour of a good ripe Pineapple. I have cultivated in the kingdom of Naples a Grape of this description, and not being able to find it in any other locality, I should be glad of the information I have just asked for. *Robert Tait. Gard. Chron., February* 12, 1853.

Publications Received.—*Gardening on the Riviera*; Sutton and Sons, Reading; price 2/6 net.—*Practical Vegetable Growing*, by J. W. Morton; Ernest Benn, Ltd., 154, Fleet Street, E.C.4; price 10/6.—*Plant Hunting*, by E. H. Wilson, two volumes; illustrated; The Stratford Company, Boston, Massachusetts.—*Black's Gardening Dictionary*, by E. T. Ellis; A. and C. Black Ltd., 4, Soho Square, W.1; price 7/6 net.—*Year Book of Pharmacy and Transactions of the British Pharmaceutical Conference*; The Pharmaceutical Press, 17, Bloomsbury Square, W.C.1.

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN MOORE, Manchester.

Lycastes.—Many plants of Lycaste are showing flower-spikes, and will therefore require an increased supply of water at the roots. Unless the plants are in robust health it is not advisable to allow the flowers to remain on the plants until they fade; overtaxed plants will show the result for a long period. After flowering, reduce the amount of water until the plants are in active growth again, when any necessary repotting or top-dressing may be done, using well-drained pots and a compost similar to that used for winter-flowering Cypripediums. Lycastes may be grown at the cool end of the intermediate house; in favourable districts they will do well in the cool house. Avoid any excess of atmospheric moisture when the temperature is low, while the leaves should not be sprayed at any time unless arrangements are made for the foliage to dry quickly. Scale insects often attack the plants, but may be carefully removed by sponging with tepid water.

Odontoglossums.—When a number of these cool-growing Orchids are grown, there will be plants in various stages of growth, and repotting may be successfully done during the spring and autumn months. New roots are produced freely from the young growths, just as the bulb is beginning to swell, therefore any plants that require repotting may receive attention at this stage of growth. Use well-drained pots and a soft, open compost consisting of equal parts of Osmunda and A.1. fibre, one part Sphagnum-moss, with a little extra moss for the surface. It is not advisable to bury the rhizomes as some varieties of Odontoglossums are susceptible to rhizome rot, a disease that often causes serious loss. If this is detected, all diseased plants should be removed; the sound pieces should be allowed to dry before repotting them. When performing this operation, three bulbs to each lead are sufficient to retain. Any sound bulbs that have been taken from the crowns may be placed on moss in shallow boxes or pans until the dormant eyes start into growth, when they may be potted into small pots. Recently potted plants require very careful watering until the roots are seen on the outer surface of the compost, when an increased supply may be given. These Orchids enjoy plenty of light, but not direct sunshine as this is liable to injure the foliage, especially after the dull winter months. Ventilation during cold, windy weather should be given with discretion.

Blinds.—With increasing sunlight it may become necessary to use the blinds for shading tender-foliaged plants. The blinds should be examined and repaired if necessary.

THE KITCHEN GARDEN.

By ALLAN FALCONER, Gardener to the CHEADLE ROYAL MENTAL HOSPITAL, Cheadle, Cheshire.

Forcing Rhubarb.— Continue to introduce a few crowns to the forcing house or under the stages in the greenhouse each fortnight, until the outdoor crop is ready. The use of fermenting material is not advisable when forcing Rhubarb, as there is a tendency to impart to the stems a tainted flavour; half-decayed leaves, well-packed between the roots, are preferable.

Jerusalem Artichokes.— This vegetable does not always receive the attention it deserves. The tubers should be planted in well-prepared ground so soon as the weather permits, six inches deep and two feet apart, with three feet between the rows; as growth proceeds the plants may be earthed up. If this method of growing them is adopted, fine produce is produced with little trouble.

Exhibition Onions.—So soon as the seedlings are ready, transfer them from the seed boxes into other boxes or pots, containing a coarser but similar mixture to that advised for sowing; bone-meal and wood-ash may also be added. Use boxes four inches in depth, and place the seedlings three inches apart; if pots are used, sixty-sized are suitable. It is advantageous to plunge the pots in soil, to conserve moisture. A temperature of from 50° to 55° is suitable for growing these seedlings. They should be placed so near the glass as possible, well watered, and syringed occasionally.

Trenching and Digging.—Owing to the excessive rainfall of the past month, little progress has been made with trenching and digging, and this work is in arrears; therefore every effort should be made to complete these operations so soon as suitable conditions prevail. I would, however, advise those with very heavy land to wait until the ground is in a fit state for cultivation rather than to attempt digging under wet conditions. Soil conditions are so variable that no hard and fast rule may be laid down. Observations of heavy, sticky soils have led me to believe that no useful purpose is served by attempting to deeply cultivate them until February, unless the weather in January is particularly dry; I have proved in these gardens, where we have a very heavy soil, that land turned over in February is, later, in better condition to receive the various crops, than that cultivated earlier. Where large breadths of land have to be cultivated with horse-drawn or motor-driven implements, it is advisable to shallow plough every available space so soon as the crops have been removed, especially after such a wet season as the last; by this method all weeds are destroyed, the soil is drained and pulverised ready for the carting or wheeling of manure on to it, for the important operation of deep cultivation. Take advantage of any frosty weather to get the manure carted or wheeled on to the ground; manure should always be spread, for, if excessive frosts occur, it will prevent the ground becoming unworkable. It is not advisable at any time to allow manure to stand in heaps on the land. Where time and labour is available, a certain amount of trenching should be done each year, especially for some of the more important crops such as Onions, Peas and Beans, while the ground where early sowings are to be made will naturally receive the first attention; this applies especially to that for Parsnips, early Peas and Onions. In my previous notes I mentioned the Simar roto-tiller, a machine that I have used for several years with great success. It is more satisfactory than either the spade or the plough, and is also a most useful machine for surface cultivation, saving both time and labour; its use results in the production of considerably improved crops.

FRUITS UNDER GLASS.

By T. PATEMAN, Gardener to SIR CHARLES NALL-CAIN, Brocket Hall, Hertfordshire.

Early Peaches.—Peach trees growing in pots, that were started into growth during December, will have finished flowering and the fruits will be swelling freely. It is a great mistake to crop trees growing in pots too heavily, but at the same time they may be allowed to carry sufficient fruits to prevent the production of coarse growths. Now that the fruits are swelling a liberal top-dressing of rich compost may be afforded, but if the receptacles become filled to the rim, means must be taken to prevent the new compost from being washed away; the best method is to place collars of tin, about six inches in width, around the tops of the pots. The trees should never suffer from lack of water at the roots; on the other hand, over-watering must be avoided, although trees that are in a healthy condition may scarcely be over-watered during the season of active growth. The disbudding and pinching of the young shoots should be attended to at intervals, for it is not wise to complete this operation at one time. Close the house early, and syringe the trees on all favourable occasions; tepid water should always be used both for syringing and watering.

The Second Peach House.—Trees growing in borders and started into growth about the middle of last month will now be in bloom. Pollenate the flowers with a rabbit's tail at noon on each day, when the pollen is dry, and close the house early to conserve so much of the sun's heat as is possible; on the other hand, it is not advisable to force the trees by the excessive use of artificial warmth. A night temperature of 50°, with a rise of 5° during the day when the weather is dull, is sufficient at this season; the thermometer may register several degrees higher during sunny days. So soon as the flowering stage has passed the borders may, if necessary, be watered with tepid water. Beware of aphis attacks, or better still prevent them by fumigating the house so soon as it is advisable to do so.

Cherries.—When the fruits of the earliest trees are well set, the temperature of the house may be raised slightly, but it is fatal to hurry this crop in the early stages. A night temperature of 50° is sufficient during cold, frosty nights, but, on the other hand, several degrees higher may be allowed during mild, open weather. Later trees should be fumigated just before the flowers commence to expand, and a careful watch should be maintained for aphis. Ventilate the house freely on all favourable occasions, but guard against cold draughts.

General.—Disbudding of Vines should be done gradually. In the early house the shoots may be stopped and tied, care being taken not to break the growths.

PLANTS UNDER GLASS.

By J. COUTTS, Assistant Curator, Royal Gardens, Kew.

Greenhouse and Stove Climbers.—The pruning of the various climbers used for furnishing the roof-rafters and pillars of plant-houses should be completed without delay. They may, in most instances, be untied from their supports, thinned out or pruned hard back according to their character, and cleansed before replacing them in their positions. Over-crowding of the shoots must be guarded against. When they start into growth, many plants of this description will require to have their shoots severely thinned if the best results are to be obtained from them. Plumbago capensis and Bougainvillaeas may be mentioned as examples of subjects that need such thinning. Plants of Clerodendrons and Allamandas, that have been kept dry at the roots throughout the winter, may now be given a thorough soaking, and if placed in a higher temperature will soon start into growth. Fuchsias are specially useful and beautiful as roof-climbers in greenhouses and conservatories, not the least of their merits being the fact that they flower freely in moderate shade; an important factor when houses have to be kept shaded during the hottest part of the day. Many climbers cannot be grown where shading is employed, if full exposure to all possible sun is essential for their flowering.

Sensitive Plants.— Mimosa pudica, the well-known and interesting Sensitive Plant, may be raised from seeds sown this month in a warm house. Apart from the interest it excites by its sensitive character, it is quite an elegant and graceful plant. Desmodium gyrans, the Telegraph Plant, is another interesting subject that may be raised from seeds sown now. It has trifoliate leaves, the terminal one large, and the two lateral ones small; unlike the Sensitive Plant, that is sensitive to touch, the leaves of Desmodium are in more or less constant motion without being touched. The two small lateral leaflets move up and down, either evenly or in jerks, the movements being most noticeable during bright sunshine. Plants of this description are always worth growing, for they are sure to attract attention. Desmodium gyrans grows freely in any good potting compost, in an average temperature of 60°.

Tuberous-rooted Begonias.—The dry roots of these may be started as required in a warm house, laying them out in boxes or trays of leaf-soil or fibre. When they have commenced growth they may be placed in suitable pots, using at this stage a fairly light compost made moderately firm in the pots. They may be gradually accustomed to cooler conditions and potted on when necessary. Prick off the seedlings that were raised early in the year; if they are kept growing steadily they will provide a useful succession of blooms at the end of the summer.

HARDY FRUIT GARDEN.

By T. E. Tomalin, Gardener to the Earl of Bessborough, Stansted Park, Emsworth, Sussex.

Bush Fruits.—Where the pruning of these subjects has been deferred owing to the danger of birds attacking the buds, it should be done without further delay. If it is desired to increase the stock of Gooseberries and Currants, cuttings may still be inserted with every prospect of success, although the autumn is undoubtedly the best time for this operation. Straight shoots of medium strength, about one foot in length, should be chosen; those of the Gooseberries and Red and White Currants should have all but three or four buds at the top removed, it being desirable to grow these with clean stems six inches or more in length. Black Currant cuttings may be inserted with all their buds intact, for they will eventually produce their best fruits on growths produced from the buds left at, or below, the ground level. At this season of the year the cuttings should be planted firmly in a north border with one-third of their length in the soil. Bush fruit plantations should receive a dressing of farmyard manure every second year, whilst for the alternate years a dressing with a mixture of three-parts superphosphate, one part sulphate of ammonia, and one part sulphate of potash may be applied at the rate of three ounces to the square yard. This should be lightly forked in after the pruning is finished. Lime may be applied occasionally instead of manure; it should be scattered broadcast over both bushes and ground, preferably on a damp morning.

Old Fruit Trees.—In many gardens one sees an occasional very old Apple or Pear tree that has long passed the most useful stage, but is, nevertheless, tolerated either from sentimental reasons or, perhaps, because its second-rate fruits prove useful in seasons of scarcity. These old trees are apt to be missed when spraying is being done; thus they become a menace to an otherwise clean fruit garden by harbouring the pests that are prevented from establishing themselves on the younger trees. If an old tree fails to give a sufficient return to justify its existence it should be destroyed and a young one planted in its place; if it is useful it is worthy of an occasional thinning of the branches, and regular spraying to keep it free of moss, lichen and insect pests. Now is a suitable time to deal with these veterans. Cut out all branches that cross others, and those that by their position are excluded from sunlight and air, and then apply a thorough spraying of a tar-distillate wash, at ten per cent. strength. A liberal dressing of manure may then be forked in around each tree; when performing this operation, bear in mind that the active feeding roots are probably at least so far from the trunk as the outer branches.

THE FLOWER GARDEN.

By J. G. Weston, Gardener to the Duke of Devonshire, Chatsworth, Bakewell, Derbyshire.

Box Edgings.—Though these have some disadvantages, in that they form excellent harbours for slugs and other vermin, for formal gardens they are one of the best and most permanent edging plants, provided that they are kept in good condition by regular attention. If a Box edging has been neglected and is patchy or unhealthy, it should be renovated, or taken up and replanted. The present is a convenient time for this work. A section of the old plants should be taken up and divided, only retaining small and healthy, well-rooted pieces for replanting; if the weather is bad this preparation and division may be done under cover. A quantitiy of the old soil may be removed—one sometimes sees Box edging that has been patched up, looking decidedy unhealthy owing to having been planted in exhausted soil—and its place filled with good fresh material, making it thoroughly firm and level before starting to plant. The young Box plants should also be made quite firm in the ground; although they appear somewhat straggly and uneven when planted, it is better to defer clipping until later in the spring, when new growth has commenced. Box edging is often ruined by allowing the occupants of the beds or borders to grow over it during the late summer and autumn. This renders the Box-growth very tender and susceptible to injury by early frosts. To avoid this, the bedding plants should be pinched back regularly, as healthy Box edging is necessary to make the general scheme satisfactory.

Perennial Asters.—This delightful class of herbaceous plants has been greatly improved during recent years, so much so that few gardens are entirely without them. There is now a wealth of varieties in many shades, suitable for all situations; by careful selection, the flowering season may be considerably extended. These varieties range in height from a few inches to several feet; they may be used with effect in the mixed borders, but are undoubtedly seen to the best advantage if a large bed or border can be devoted entirely to them. A border with a dwarf hedge as a background, or dwarf shrubs, is suitable, provided that the roots of the latter are prevented from taking possession of the border. Strong, tall-growing varieties should be planted sparsely at the back of the border, as they require ample space for development. Those of medium height may be utilised in smaller groups throughout the centre of the border, and the dwarf varieties may occupy the front. New and improved varieties are continually being introduced but for those who wish to make a general selection, I recommend a few good standard varieties of the different sections. Of the dwarf Amellus type Beauté Parfait, Framfieldii, King George, Perry's Favourite, Rudolph Goethe and cassubicus are desirable; while of the small-leaved Ericoides group, Chastity, Maidenhood and Margaret may be selected. Among the large-flowered, tall-growing varieties we have such gems as Barr's Pink, Dick Ballard, Little Boy Blue, Purple Emperor, Nancy Ballard, Climax, Maid of Athens and Northern Giant.

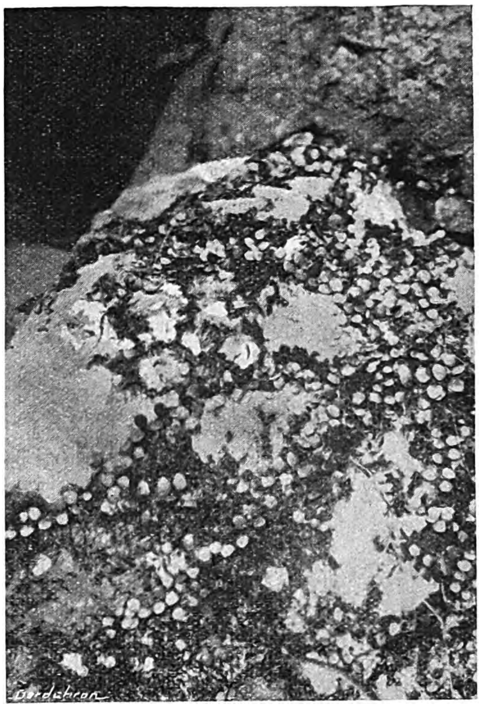


FIG. 61.—DRYMOGLOSSUM CARNOSUM VAR. MINOR.

(see p. 116).

FOR NORTHERN GARDENERS.

By A. T. Harrison, Gardener to the Marquis of Ailsa, Culzean Castle, Maybole, Ayrshire.

Dahlias.—The roots of these should now be examined, and any varieties to be increased may be placed closely together in a warm house, in leaf-mould. They will soon produce growths that may be removed when from three to four inches long, and inserted in sandy soil, either in pots or boxes. If these cuttings are kept moist and shaded they will soon become established, and may then be potted singly and grown to form good plants for the summer display. Where the stock of old roots of such varieties of bedding Dahlias as Coltness Gem are equal to requirements, the tubers may be allowed to start more slowly; excellent results may be obtained by putting them into boxes of fairly good compost, and placing them in a cool, frost-proof house. Later, the tubers may be divided, leaving one or two growths to each portion, and either potted or re-boxed in preparation for planting.

Rhubarb.—If regular supplies of this vegetable have to be maintained, a further stock of roots should be placed in the forcing-house, and additional supplies may be had by covering a number of crowns with large boxes, or barrels, where they are growing, and surrounding them with a good depth of stable manure and leaves. The exhausted crowns may be removed from the forcing house; if stood closely together outside for a time, and not allowed to suffer for want of water, they will form the nucleus of a new plantation.

Calceolarias.—Seedling plants of the herbaceous Calceolarias that have been wintered in small pots should now be repotted into five-inch or six-inch pots, using a fairly rich compost of loam, leaf-soil, old Mushroom-bed manure and sand. These plants are best grown in a cool, shaded house. They are soon spoiled if subjected to high temperature, while their worst enemy, green-fly, is sure to attack the plants earlier under warm conditions than it will if they are growing in a cool house. Besides the large-flowered section, there are many other useful Calceolarias that are suitable for greenhouse decoration, as C. Clibrani, with its masses of small, yellow flowers; C. Burbidgei, one of the strongest growers, with large, pale-yellow flowers—well-grown plants of this variety may reach six feet in height, and make a striking group; and C. Veitchii, with distinct, lanceolate foliage and white flowers. The numerous hybrid forms are of more than ordinary interest by reason of their more recent introduction. Young plants of all these forms should be repotted when necessary, while frequent light fumigations will keep them free from insect pests. In mild districts, C. integrifolia (rugosa) makes large, shapely bushes, and often survives for many years out-of-doors, but it is advisable to have a few young plants growing in pots to take the place of older specimens that may collapse suddenly. C. violacea is, perhaps, the gem of the family, with its curious, hooded, violet-spotted flowers. It is a valuable addition to any collection of half-hardy shrubs, and if grown against a wall, amongst other plants, it assumes a semi-climbing habit. Specimens of this Calceolaria have been seen from five to six feet in height, supported by other plants into which they had grown.

Cinerarias.—Plants obtained from seeds sown early will now be producing flower-buds, and until the blossoms are open may be fed regularly with diluted liquid manure, or they may receive an occasional top-dressing of a well-compounded fertiliser. Seeds that were sown later usually produce the best plants; these may now be repotted into larger pots, in a compost similar to that recommended for Calceolarias. The plants should be shaded from strong sunshine and watered carefully until there is evidence of active root growth, while the plants require plenty of space to allow their foliage to develop naturally. Where extra large pots are objected to, much may be done by regular feeding to keep the plants in good condition, but to have Cinerarias at their best, both in foliage and flower, a fairly large pot is desirable.

INDOOR PLANTS.

SAINTPAULIA IONANTHA.

SAINTPAULIA ionantha, the Ionian Violet, is a charming stove plant that is easily grown and propagated. Its purple-blue flowers, with prominent yellow stamens, are attractively displayed above rosettes of dark-green, fleshy leaves.

Like most other Generiads, it delights in a light, rich soil and a warm, moist atmosphere; under such conditions, it may flower during the greater part of the year. Plants may be grown from seeds to the flowering stage in six months, and subsequent propagation is easily effected from leaf-cuttings which soon produce plants that make valuable decorative material, in three-inch and five-inch pots or pans. *A. P. C.*

COTYLEDON JAPONICA.

THE Cotyledons are little grown and not so much appreciated as the Sempervivums and Sedums, which belong to the same Order of Crassulaceae. C. japonica (Fig. 62) is grown in the driest rocky places, and also abounds on houseroofs in Japan. Although common in its habitat it is worth growing for its pale, purplish-green, succulent leaves and lovely autumn flowers.

Between the crevices, and on the dry, sunny parts of a rock garden, this Cotyledon makes a lovely feature. When grown in a border, a dry place should be selected for it, and stones placed around or between the plants. It is most effective, particularly in flower, when planted in a mass; in shady, moist situations, it is unattractive.

C. japonica forms a rosette of pointed, linear leaves, and in October produces a lovely spike of numerous, five-petalled, white flowers with crowded leaves on its lower part. This plant has resting leaves, similar to those of Drosera rotundifolia and Pinguicula caudata; the long, narrow leaves die in late autumn, and the plant produces the small, imbricated leaves, gathered into a small, dense rosette; in this condition the plant passes through the winter. *K. Yashiroda.*

DRYMOGLOSSUM CARNOSUM. VAR. MINOR.

ALTHOUGH a member of the great family of Ferns, the fronds of this Drymoglossum are not like those of the common Ferns. On the creeping rootstocks, often ten feet or more in length, arise the thick, glossy, round, green leaves which no other Fern can surpass in their charming shape and colour. The sporophyll—spore-bearing leaf—appears in September. It is of linear shape, with large sori.

The Japanese appreciate Drymoglossum carnosum var. minor (Fig. 61, p. 115) and grow this Fern on the rocks and tree trunks in Japanese gardens. It grows in the sunny places as well as in the shady positions. *K. Yashiroda, Tonosho-Kyohu, Kagawaken, Japan.*

VELTHEIMIA VIRIDIFOLIA.

PLANTS that flower early in the new year are always greatly appreciated, and as the Veltheimia may hold its own amongst the denizens of the greenhouse at this time of the year, I recommend it as a plant which might be more generally grown. A group of plants of V. viridifolia may be seen in the large conservatory at Kew, where they have made a conspicuous feature for several weeks, but those who are unacquainted with its appearance, and are unable to pay a visit to Kew at the present time, may be able to gather some idea of the beauty of its flowers from the following description.

Its inflorescence always reminds one of the Red-hot Poker plant (Kniphofia) as its flowers are formed in a spike, in a similar manner, and as they fade they hang downwards and clasp the stem, where they remain for a week or more, still retaining some of their colour; the Veltheimia, however, only grows to about two feet in height.

The tubular blossoms are about two inches in length, are rosy-pink mottled with pale green, and have a quarter-of-an-inch band of pale green at the mouth. Several dozen flowers are developed on each pink and green-mottled stem, and as it takes about two months for all the flowers to expand, their decorative value is extended over a lengthy period. The flowering spike arises from a tuft of broad, bright green, wavy-margined leaves, that spring from a large Hyacinth-like bulb.

Being a native of South Africa, this plant may be grown in a slightly heated greenhouse during the winter, where its blossoms expand with very little artificial heat.

When the last of the flowers have faded, the plants may be given a rest; water should be gradually withheld so that during the summer months they will have just sufficient moisture to keep the bulbs plump, and may be exposed to full sunshine to facilitate the ripening process; a cool situation, such as a garden frame, is an ideal position for them until August. By this time signs of renewed activity will be observed, and the bulbs should then be freed from the old soil and repotted.

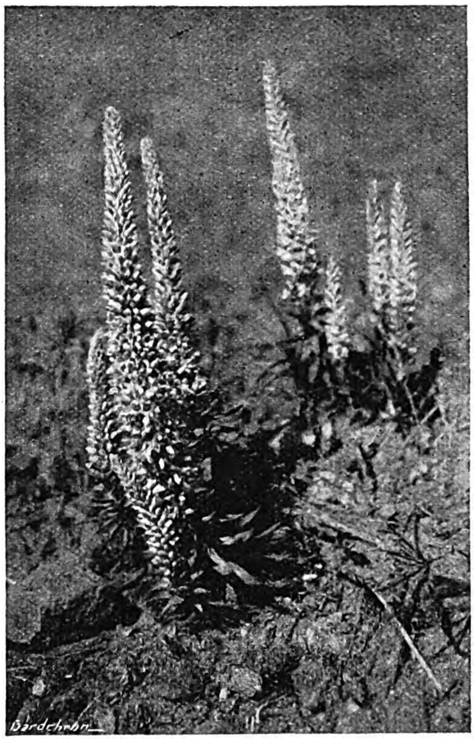


FIG. 62.—COTYLEDON JAPONICA.

Use a rich compost of three parts turfy-loam, one part well-decayed manure and the usual amount of silver sand.

The soil should be firmly packed around the bulb, which need be only half-buried in the soil. After potting, place the plants in a warm greenhouse and syringe the foliage on suitable occasions; the flowering spike will soon appear and will reach perfection during January.

Fortunately, the Veltheimia is easily propagated, so that a large stock of plants may soon be obtained. Propagation may be effected by removing the leaves and inserting them in pots of sandy soil, in the greenhouse, to develop young bulbils at their bases. These bulbils should be potted up as they become large enough, and kept steadily growing until they attain flowering size.

V. viridifolia was introduced into this country so long ago as 1768 and is figured in the Bot. Mag. t. 501. *G. F. Gardiner.*

PLANTING TREES AND SHRUBS IN EARLY SPRING.

IT is an erroneous idea that shrubs may only be planted during autumn and early winter. Although November and early December are ideal months for this operation, as there is a certain amount of heat left in the ground that promotes the formation of new roots soon after planting, but those who have not been fortunate in completing this work need have no hesitation in carrying it on throughout the winter and early spring months, whenever the ground is in good planting condition. Our nurserymen are alive to this fact, and most of them are now in a position to offer well-grown, recently transplanted shrubs of moderate size that may be safely moved at any time up to the month of March, and in colder districts to a later date. The lack of labour during the period of the war had a marked effect on nursery stock, but this has now been overcome and no one need go further than a good British nursery to get what he requires.

Many enquiries are received from time to time as to the best shrubs for a small or moderate-sized garden. As soils vary considerably, in some cases one may have to deal with a peaty or sandy loam, in others a heavy loam of a calcareous nature; or again it may be a sandy soil with chalk near the surface, so, naturally the selections of shrubs must vary.

Why should one go to the trouble and expense of trying to grow Rhododendrons, Azaleas, etc., in a soil heavily charged with lime, by making expensive and often disappointing beds of peat and loam, when there is a host of interesting plants that will thrive and flourish in such soils?

Whatever types of shrubs are to be planted, the preparation of the site that they are to occupy should be thorough. The full beauty of a large number of our shrubs is not realised through lack of proper perparations of the ground before planting. This should be accomplished by deep trenching so early as possible, to allow the ground to settle before planting. If the soil is of a poor, sandy nature, a quantity of well-rotted manure or decomposed vegetable matter may be applied as the work proceeds. Where grassland is being broken, the addition of manure will be unnecessary, for the turf will supply the necessary food material for a number of years. Should any part of the ground need draining this may be attended to before planting; most shrubs, as well as other plants, will not grow in water-logged soil. If the initial preparation of the ground has been well-done, and the shrubs planted carefully and firmly and afterwards secured to stakes, if necessary, no fear need be felt for their future welfare.

A loose soil-surface may be maintained by the constant use of the Dutch hoe during periods of dry weather in spring and summer. Deep, thorough preparation of the soil during the winter, and regular hoeing during the summer, will give far better results than supplies of cold water given at irregular intervals during dry weather.

The following is a selection, though by no means complete, for questions of soil, situation and climate will naturally influence the planter's choice, of shrubs that will give satisfaction to the average reader. Some of the recent introductions that are proving welcome additions to the hardy shrub border have been included.

Amongst those that are suitable for soils of a loamy nature is Berberis Darwinii; although an old plant, it is still one of the best evergreen varieties of this large family, having dark-green, shining foliage, and clusters of orange-coloured flowers produced in spring, followed by luscious blue berries in autumn, that, unfortunately, the birds are very fond of. Berberis stenophylla is a graceful hybrid, with long, drooping shoots clothed with small, evergreen leaves; the whole plant is covered in spring with myriads of yellow flowers. The weeping habit makes it an ideal shrub for planting near the waterside, but it must not be planted where its roots will be constantly wet. For colour of foliage, none are better than B. Thunbergii, a Japanese species of dwarf, spreading habit. It requires an open, sunny position to induce its foliage to turn a glowing-red colour during autumn. B. Jamesiana, of recent introduction, is extremely attractive with its tall, erect, purple-coloured stems; the foliage also is attractive, especially in early spring and autumn. The fruits are borne in small clusters and are bright coral-red in colour. Berberis Wilsonae and its numerous hybrids are all desirable plants; they are well-adapted for the front of borders, and the brilliantly coloured fruits, that are produced freely and are most attractive, last until destroyed by frost.

Buddleias may be represented by the well known B. variabilis Veitchiana, with spikes of violet-mauve flowers, borne during late summer; and B. alternifolia, that flowers in early June. Unlike those of the variabilis group, B. alternifolia should not be pruned during winter, but immediately after flowering, for it flowers on the previous year's wood; the object should be to encourage the formation of long, arching shoots.

For early spring, Forsythias are invaluable; when proper attention is given to pruning they regularly provide a display of golden blooms.

Escallonias are valuable evergreen shrubs, especially adapted for sea-side planting, and will endure all but the severest winters. E. Donard's Seedling is a strong-growing hybrid with white, pink-tinted flowers, produced from July onwards. E. langleyensis, with terminal clusters of deep, cherry-red flowers produced during June, is very effective and does well inland.

Of the berry-bearing shrubs, Cotoneasters are a large and valuable group, several of them being well-adapted for small gardens. C. lactea is an evergreen species, about six feet high, with loose panicles of flowers, followed by clusters of small, red fruits. C. horizontalis is a charming, deciduous shrub, and during May is covered with tiny, pinkish-coloured flowers that are greatly beloved by the honey bee; thousands of these useful insects visit this plant when in bloom. In autumn the foliage changes to a brilliant reddish-colour, while the bright red fruits, abundantly produced, are most effective. C. horizontalis is a useful plant for low walls or large rock gardens. C. rotundifolia, a sub-evergreen species from the Himalayas, retains a considerable number of its leaves until the following spring, and bears, with great freedom, large, red, globe-shaped fruits, that remain on the plants until the following April. These fruits seem to be distasteful to birds, as they seldom touch them, even during hard weather. C. Henryana, one of the best evergreen species from China, bearing clusters of crimson fruits in autumn, is a strong-growing plant, eight to ten feet in height, while C. rubens is nearly evergreen, and a rapid grower.

There are a few Viburnums that might be grown in every garden; V. Carlesii with its attractive heads of pink and white, wax-like flowers, is worth growing for its delicious perfume alone. V. plicatum is still one of the best flowering shrubs, and might be included in every collection. It forms a symmetrical bush that is covered with rosettes of bloom during early June.

Pyracanthuses may be represented by the well-known P. coccinea var. Lalandei. The newer P. Gibbsii is extremely free in fruiting, and the berries hang on the bushes for a long period, especially if protected from birds; while P. Rogeriana makes a spreading bush and has orange-scarlet fruits. If the soil is of a light nature no collection would be complete without representatives of the Cistus family; unfortunately, most of them are not perfectly hardy. C. Silver Pink is a fine form, and when better-known will be planted freely. It has a decided advantage over other members of this interesting family in that its flower remain open much longer during the afternoon, and it is also one of the hardiest. C. laurifolius is fairly hardy, and will withstand our average winters if planted in well-drained positions. *R. F.*

TREES AND SHRUBS.

SYMPHORICARPUS ORBICULATUS.

Mr. A. T. Johnson, in his 'Notes from a Welsh Garden," published in *The Gardeners' Chronicle* of December 31 last, mentions the purple berries of Symphoricarpus orbiculatus. The description "purple" is not quite accurate, for the fruits of this charming shrub are really red with, perhaps, a faint purplish flush. The species is planted extensively hereabouts, and is popularly known as the Coral Berry, or the Indian Currant, while nurserymen usually catalogue it under the name of Symphoricarpus vulgaris.

S. orbiculatus is unique in being the only red-fruited member of the genus. It forms a rather dense bush of spreading habit up to six or seven feet in height, and it looks particularly handsome in the late fall, when the slender stems are arched under the weight of a heavy crop of decorative fruits.

The fruits are aggregated in dense, irregularly shaped clusters borne in the axils of each leaf and on the under side of the stems; after the leaves have fallen the likeness between a fruiting branch and a string of coral is easily recognisable.

It appears, unfortunately, that this distinct shrub does not fruit very well in Britain, except after an exceptionally hot summer; a fact which is to be regretted when its ornamental value is taken into consideration. *T. H. Everett, New York, U.S.A.*

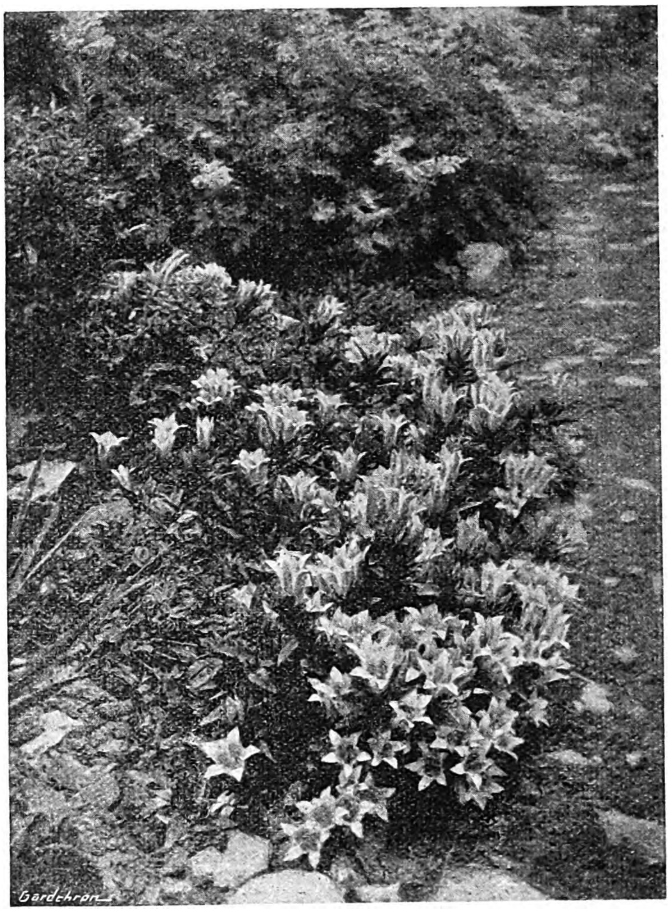


FIG. 63.—GENTIANA SEPTEMFIDA.

(see p. 119).

BUDDLEIAS.

To those who are seeking new shrubs, the Buddleia family is one to which new sorts are frequently being introduced. The two most popular species of this genus are Buddleia variabilis and Buddleia globosa. These have been grown in English gardens for many years, and are among the most useful shrubs. The former demands little more than careful planting in ordinary soil, plenty of sun, and cutting back hard during the early spring, just as growth is commencing. Under these conditions it forms a large shrub and is covered with a wealth of blossom in August and September, when its beauty is enhanced by the number of brilliantly coloured butterflies that visit it. The Red Admiral is the most common visitor, but with it come its cousins the Tortoiseshell, the Peacock, and occasionally, the Painted Lady. Buddleia globosa may be treated in two different ways. If it is pruned in similar fashion to B. variabilis in early spring, it flowers at the same time as that species, but if left unpruned, it produces its globular heads of orange flowers in early summer.

B. variabilis var. nanhoensis is a dwarf variety from China, and requires the same treatment as advised for the type.

B. alternifolia is a comparatively new introduction and a beautiful shrub. It is less vigorous than B. variabilis, and has graceful, arching branches that are covered during June and July with sweetly-scented, soft, mauve-coloured flowers.

B. Farrerii, also from China, is not so hardy as the previous species, but it is easily propagated. It should be grown in the open as well as in a protected position. So many gardeners lack the courage to plant shrubs of doubtful hardiness in the open and thereby lose the joy of seeing them thriving, perhaps for many years, unharmed. Shrubs of this kind, though tender in early life, often become inured to our climate as they mature. It is surely worth while to plant specimens in the hope that they will flourish—if they die, then plant again.

Other Buddleias that are worth growing are B. auriculata and B. nivea. B. variabilis also produces many varieties, the flowers of which vary both in size and colour.

To secure a really fine effect, Buddleias may be massed in large groups. So often one sees a single specimen of a shrub, beautiful in itself, but forming, as it were, a mere dot in the landscape. If we have only small gardens let us reduce the variety that we grow and use each particular border for a particular shrub or family of shrubs. Begin with the Buddleias, for all these may be planted to obtain almost immediate effect, while they do not require nursing, as do so many of the slower-growing shrubs. A group of a dozen B. variabilis in its different forms, a similar number of B. globosa and B. v. var. nanhoensis, with an occasional specimen of B. alternifolia, would produce a magnificent spectacle. *William Acworth, Chobham.*

ROSE GARDEN.

ROSE AMERICAN PILLAR.

American Pillar is a very fine Rose that requires plenty of room for development, and is a variety pre-eminently suited for covering arches or pergolas (Fig. 60, p. 113). It belongs to the Wichuraiana group, and is admired for the large, glossy foliage which adorns its long, vigorous growths. The trusses of flowers are proportionately strong; indeed, I cannot call to mind any other climbing Rose that is quite the equal of American Pillar for robust vitality. Perhaps bright-rose would fairly well describe the colour of the large, single flowers, the centre of each bloom being creamy-white. This Rose was introduced in 1909, and it is summer-flowering. *C. T.*

CLIMBING ROSES.

All varieties of climbing Roses are best pruned directly after they have flowered, but if they were not attended to last autumn the growths should be well thinned now, removing so much of the old wood as possible. There is a general tendency to leave too much wood in climbing Roses; a limited number of well-ripened shoots will give a much better display in summer than a number of weaker shoots crowded together. *W.*

MULCHING ROSES.

In the note on Mulching Roses, in *The Gardeners' Chronicle* of January 7, page 16, Mr. Stead invites readers' views as to whether it is better to manure in autumn or spring. I have never agreed with the reprehensible practice of mulching Roses in autumn, and allowing the manure to lie on the surface of the beds until spring. I have been told to apply it by lady employers who thought they knew more about gardening than anyone else, but never followed the practice when left to my own devices. The soil in the beds always seemed sodden and sour in spring when covered with manure all the winter. I do not think Roses ever derive much benefit from manure forked into the surface of the beds; apart from keeping the soil in good tilth for any shallow-rooting plants put in between the Roses—such as Violas—it does very little good. Roses are deep-rooting subjects, and will send their roots to a great depth to find manure, but I have never known them come to the surface to find it. When the beds are made the soil should be deeply trenched, and the manure placed at the bottom of the trench; about every third year the plants should be lifted, the beds retrenched, and manure again put in deeply. I have dug up old, neglected plants, trenched and manured the ground, and replanted the old trees; they were rejuvenated. With regard to pruning, I seldom leave that operation until spring. In a mild winter the plants have made growths at the top, and bleed profusely when cut; they seem to take a long time to start from the dormant eyes afterwards. I have pruned so early as November and had a much better and earlier display of flowers than when pruning was left until spring. *Grigor Roy, The Gardens, Stoke D'Abernon Park, Cobham.*

HARDY FLOWER BORDER.

HERBACEOUS PERENNIALS FROM SEEDS.

The raising of herbaceous perennials from seeds is an excellent method of increasing stocks of plants for extending the mixed herbaceous border. By this method it is possible to add considerably to the interest and value of the plants employed. Where definite colour schemes are arranged, plants raised from seeds need not be included in the border until tested for colour, but in the mixed border they may be placed in their permanent positions so soon as large enough to handle, and there is a surprisingly large number of herbaceous perennials which may be relied on to flower in the first year, if sown early and given good cultural conditions.

For this purpose frames are very helpful, and there are many advantages in raising these plants in frames and growing them on in boxes or small pots until large enough to plant out. Under this system, conditions are within the complete control of the grower, and, as he seldom wants more than a dozen plants of any one species, he is able to rely on obtaining the plants he needs from a small packet of seeds, and he may produce quite a large number of species, even with limited accommodation.

Some of our modern seed catalogues list hundreds of species of hardy herbaceous perennials, including most of the popular border plants and many of the newer introductions, thus enabling plant lovers to keep their collections up-to-date at a trifling cost. Those who have no frame accommodation may obtain equally good results, if not quite so quickly, by sowing seeds in the open, and even then, under favourable conditions, many of the plants will flower the first year, including Anthemis, Campanulas, Centaureas, Delphiniums, Gaillardias, Erysimums, Geums, and Lupins. *A. P. C.*

FLOWER GARDEN.

SAPONARIA VACCARIA.

In these days, when flowers are so much prized for cutting, it is surprising that the above does not more often find its way into British gardens. The plant is an annual and could be grown for similar purposes as Gypsophila elegans, which is so popular in the markets. S. Vaccaria grows two feet high, and has pink flowers, as gracefully disposed as those of the Gypsophila, while the flowers may be cut with longer stems. There is also a white-flowered variety of it, and seeds of both may be obtained in this country. It is very popular in the Paris markets, although it is a native of France and grows here and there almost throughout the country. It sometimes turns up in this country and becomes recorded as a casual British plant. It is easy of cultivation, and as the plant is not bulky, but erect, it would have plenty of space at twelve inches between the lines, and three or four inches between the plants. It is cheerful and looks well in vases of water. *J. F.*

FUMITORIES.

If the Fumitories, as a race, enjoy comparatively little esteem as garden plants, many of them possess foliage of unusual charm, and as this is often in evidence in the early months of the year before most things are stirring, it is very welcome.

Corydalis cheilanthifolia, for example, will produce a tuft of singularly delicate, finely-cut foliage in February, if not before, its Fern-like leaves being pale green with a bronzy sheen. It is accompanied, or quickly followed, by the taller C. ophiocarpa whose leafage is even more elegant and of a beautiful opalescent blue on a pale tawny-green ground. This Himalayan will, later on, yield two-feet spikes of yellow flowers. It seeds freely, and will, in places, become naturalised. Even the familiar C. lutea, that has established itself among our native flora in some localities, is very delightful in early spring, its young leaves being like silvered fronds of Maidenhair Fern.

C. tuberosa, sometimes known as C. cava, has very glaucous foliage of the daintiest design, and is a first-rate plant for a shady corner, such as among Ferns. The rather stumpy flower-heads that appear in February are dull lilac, but there is a pure white variety which is greatly superior and a comely plant for a sheltered nook. Unlike most of the Fumitories, C. tuberosa and C. t. alba have a delicious fragrance. C. capnoides, given as C. lutea by several authorities, is another emerald-leaved early bloomer, and its six-inch stems carry clusters of pale-yellow flowers tipped with green. It is similar to the newer C. Wilsonii, but it is rather larger and later, and appears to enjoy all the sun it may get. C. Wilsonii has a leafage of exceptional grace and loveliness.

The two best Fumitories in my experience, for planting in woodland or between shrubs, are Dicentra eximia and D. formosa. Both of these have the Fern-like foliage so characteristic of the race. When the leaves first appear they are of an attractive dove colour that later develops into a gentle sea-green, suffused with purple. The plants spread, though not quickly, into patches of considerable size, and the soft tint of the dense mat of leaves, together with their fine and delicate structure, produce a remarkably attractive effect. Although the two species are much alike in other respects, they differ in the flowers. Those of D. eximia are reddish-lilac, and are produced on long, drooping racemes on stalks one foot or more in height. In D. formosa one has the same hyacinthine elegance, but the racemes are rather shorter and the flowers of a fresher tint, approaching rosy-pink. These species have a long flowering season, commencing at the end of March and continuing to midsummer. Thus as an accompaniment to the wild Hyacinths in a woodland garden they may afford a very delightful diversion. *A. T. J.*

ALPINE GARDEN.

HELICHRYSUM FRIGIDUM.

It is curious to many of us to discover that numerous plants from the mountains of Corsica apparently resent the conditions of our climate and give a considerable amount of trouble. One of these plants is the exquisite Helichrysum frigidum. It is always scarce in commerce, and is undoubtedly very rare in private gardens, being even absent from many collections which are justly considered among the most complete in the kingdom. I have not yet seen an illustration which conveys any adequate impression of the grace of this tiny plant. It is almost moss-like in its habit, although not so minute or lichen-like as, say, Raoulia australis, but is of much the same colour. It forms tiny tufts of closely-set, lovely foliage of a bluish-silver hue, and when it flowers gives us charming little white blooms on stems from two to three inches high. It is not very free-flowering, however, but it deserves our utmost efforts to induce it to favour us with these charming blooms.

Alas! to many this gem has proved a sad disappointment, and it has vanished, despairing of any happiness in this climate of ours, and has left its owners mourning that they were bereft of a little treasure. It loves heat and drought, and I never had greater success with it than on a dry moraine, sloping to the south, where, in whinstone chips, old mortar-rubble and sand, Helichrysum frigidum dwelt happily until one winter, during the writer's serious illness, it was left unprotected by the customary sheet of glass which shielded it from wet and kept its foliage dry so that frost might not destroy it. Then, between rain, sleet, snow and frost, this gem despairingly gave up the ghost, and was a sodden, lifeless thing when I was able to see my flowers once more.

However much we may dislike these shelters in the shape of glass sheets, or handlights, above our choice flowers, it is folly to abandon their employment in many parts of the country, especially with such a delicate subject as Helichrysum frigidum, one of the real jewels among our alpine plants. *S. Arnott.*

GENTIANA SEPTEMFIDA.

This is one of the most satisfying of all Gentians, and I know of none which is so easy to grow well. It has, moreover, a distinct beauty of its own, both in the elegance of its habit and the clear, soft blue of the wide and ample blossoms. The outer margin of these bold, bell-shaped flowers terminates in five, large (and often five small) triangular segments, and the silvery-blue throat of the flower is beset with hairs. In the form of G. septemfida which I have grown for a good many years, the individual blooms are fully as wide as those of G. acaulis at its best. These flowers are borne in copious heads at the ends of semi-procumbent stems about nine inches long. The terminal bud is the first to open. This may occur at any time in the early part of July, and from that date onwards until autumn one gets an unbroken mass of lovely colour. Thus G. septemfida comes at a most useful time of year, and it is passing over when the ornate Gentians begin their career.

This Gentian is so amenable to cultivation that it seems indifferent to soil conditions. I have it in dry places, in rich kitchen garden soil, and in a cold place near the water with a clay subsoil. In all of these positions it prospers without complaint, but those plants in the rich, moderately moist, light loam give the most hearty response and the longest period of blossoming. G. septemfida is an herbaceous species. The numerous semi-prostrate annual growths are furnished with pairs of oval-pointed leaves and, although they trail, the flowering ends of these stems are held erect as will be seen in the photograph (Fig. 63, p. 117). As it has a wide geographical range in eastern Europe and Asia, G. septemfida is found in several forms, these varying in the shape of the leaf, size of flower and other incidentals. One of these is G. s. cordifolia, with heart-shaped leaves. G. s. latifolia has narrower foliage, while G. s. procumbens, which I cannot remember having seen, is said to be a dwarf alpine development. Then there is G. s. Lagodechiana, which is rather smaller than the type in all its parts and is a very delightful plant. G. septemfida may be increased by division in autumn. The only attention my plants ever get is an annual top-dressing of decayed vegetable compost after cutting off the dead stems in autumn or early spring. *A. T. J.*

ANDROSACE SARMENTOSA.

Amongst Androsaces, A. sarmentosa and the well-known A. lanuginosa will be found the easiest varieties to grow. The former has silvery leaves covered with silky hairs, forming dense rosettes, from the centre of which spring the flower stems bearing umbels of bright rose-coloured flowers with a white eye.

The leaves at the base of the stems are larger and spoon-shaped. Runners are freely produced from each rosette, on slender, wiry stems; these root freely and are an easy means of increasing the stock. They should be pegged down in a compost of sandy loam to which a good supply of gritty material, such as chips, has been added. It is desirable to place a covering of chips around them if they are planted on a flat surface, as, like the majority of alpine plants, they delight in a cool root-run.

Like many other woolly-leaved plants, the Androsaces often damp off during winter, and where they can have the protection of a protruding ledge it will be found a great advantage. If planted on a flat surface, a sheet of glass placed over them from early autumn until March will help to carry them through the winter. This ought to be fixed at a sufficient angle to shed off all rain and dew, and be raised high enough to allow the air to circulate freely around the plant.

A. sarmentosa makes an ideal plant for pans in the alpine house, being most attractive when in bloom, especially with the numerous runners hanging over the side of the pan. (Fig. 64). *R. Findlay, Wisley.*

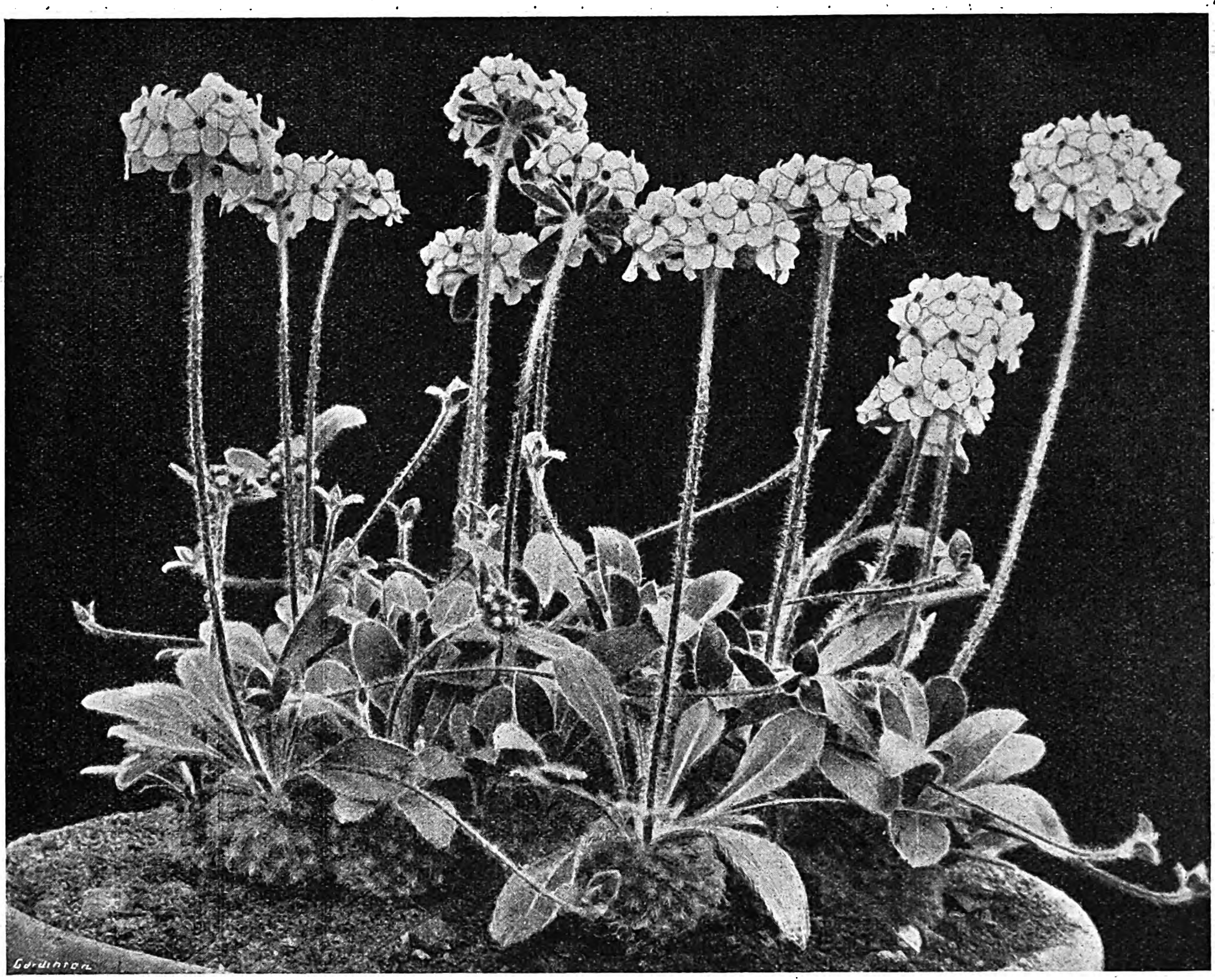


FIG. 64.—ANDROSACE SARMENTOSA.

BULB GARDEN.

CROCUS SIEBERI.

This species is flowering at the same time as the ordinary Snowdrop (Galanthus nivalis), to which it forms a dainty companion. The flowers appear while yet the leaves are rudimentary, and rise to a height of two inches or rather more. The perianth is of a pale purple or lilac, each segment delicately pencilled with a slighter darker shade, and stained with golden-yellow at the base. The orange anthers, and orange-scarlet stigmata, small as they are, add much to the beauty of the flower.

C. Sieberi is a native of the mountains of Greece, and is found at elevations varying from 1,500 to 7,500 feet. If carefully protected from mice, slugs and disturbances of the soil, it will increase rapidly. Seeds should be sown so soon as ripe. The plant is figured in Maw's Monograph of the genus, together with a striped variety, C. S. var. versicolor, collected from Crete and other islands of the Archipelago, and introduced through the late Mr. Elwes. The flowers vary much in their white and purple markings, and the orange base or throat is far more conspicuous than in the type.

As C. Sieberi and C. chrysanthus flower so much earlier than the ordinary garden varieties, I am surprised they are so little known. C. chrysanthus E. A. Bowles is also beautiful just now. *J. Comber, Nymans Gardens.*

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THE GENUS PRIMULA.

THERE is no lack of literature on the Primula genus, but it is diffuse and is found scattered over the pages of such publications as the *Journal* of the Royal Horticultural Society, the *Proceedings* of the Botanical Society of Edinburgh, the *Notes* from the Edinburgh Botanic Garden, *The English Rock Garden*, *The English Flower Garden*, and so on. Failing a handbook or monograph, a serious attempt to bring it into concise form, acceptable alike to cultivators and botanists, is sure of a welcome from both. Had Sir Isaac Bayley Balfour lived, he would doubtless have carried out his intention of dealing with the genus on comprehensive lines, for it is one of several genera to which he was especially attracted.

It is only partially true to state that a monograph of the genus is long overdue, because, had it seen the light of day only ten years ago, the additions the genus has since received from Asia would render it out of date. But even though P. Agleniana and P. sonchifolia, two species which authorities competent to judge regard as possibly the finest of the genus, have only recently found their way to the seed-pans, the world has probably not many more important Primula species to give up, and the way seems reasonably clear for a scientific work on the genus. Pending that, cultivators may well be content with the recently published little book of some 123 pages* in which Messrs. Cox and Taylor have set down most of the essential points in the management of such garden and greenhouse Primroses as are in cultivation. They have contrived, too, to bring their work up to a recent period, and although P. Agleniana finds no place in the book, that is doubtless because it was in the printer's hands before that fine species had made its *début* in this country.

The omission of all reference to P. sonchifolia, which that cautious observer, Mr. Forrest, who rediscovered it in 1906 on the Tali Range (No. 1808), rates very near the top of the tree, is perhaps less explicable on the part of the author of *Farrer's Last Journey*, because that inviting book contains much of interest about this wonderful species. Here again, the hiatus may be due to the fact that no one in this country seems as yet to have mastered the cultivation of P. sonchifolia. Farrer and Cox came upon it suddenly on Hpimaw in 1919, the former having heard of it in Peking from a consular officer who had come from Burma *via* the Hpimaw (pronounced Pimaw) Pass. It had been described to him as sky-blue, but many disappointments had made even that sanguine collector cautious, and *more suo*, in the search for it, "he conjured up the most appalling monstrosities in the way of colour. Once found, however, P. sonchifolia satisfied Farrer.* "Imagine a great, fat, bright-green cabbage bursting its way out of the old snow. Imagine the serrated leaves unfolding in order to show a patch of concentrated sky within its crown. Imagine a short, fat stem rising up topped with lavender-blue buds. Imagine the stem growing and the buds unfolding into an enormous head of Primrose-shaped flowers of a most brilliant blue, and each flower set off with a bright orange eye . . . . . . Farrer was over-cautious in describing the colour and called it lavender-blue; but it is too brilliant for that, and besides, it lacks the grey tones that go with lavender. It is sky-blue with more cobalt in it to make it richer and more satisfying to look at. There they were in colonies skirting the pathsides and clustering in the little gullies and marshes where the ground was too wet for Bamboo. As far as you can say it of any plant in that land of wet summers, they like a moderately full exposure . . . . . . This Primula is found scattered over a large area up and down the Irrawaddy-Salween divide, most of them smaller than our form and poor in colour, usually being a palish mauve, while some are even a deep purple. Botanically, it is an interesting plant, and follows closely the rest of the petiolaris section to which it belongs, and of which only one, P. Winteri, is in cultivation. If it grew in England it would certainly be a biennial, but in its home it is just as certainly perennial. It flowers in April, and seems to love forcing its way through the snow. That is a condition which is one difficulty, if only it would germinate at home . . . . . . Towards the end of summer a small, hard cabbage forms in the heart of the plant, when the present year's growth dies away, having finished its work for the year. We cut through these tiny cabbages early in August, and found in every case that next year's plant was perfectly formed, colour and all, and carefully tucked away for the winter. . . . . . ."†

A point which emerges from Mr. Cox's interesting account of P. sonchifolia is that, as with so many species of plants, there are fine and poor forms of this Primula. It may even be that as with species of this and other genera, the colour forms of P. sonchifolia do not always come true from seeds. All this, and the secret of the cultivation of this beautiful Primrose, rest, we may hope, in the hands of determined cultivators, who may not unreasonably expect to learn something more of the plant from Mr. Cox on his return from Hpimaw. Meanwhile, of the colour forms of P. sonchifolia, Messrs. Smith and Forrest distinguish one with intense indigo-blue flowers as var. atrocoerulea.‡

Of P. Agleniana there is already more hope, for Mr. J. C. Williams flowered plants of it at Caerhays last summer from seeds of Mr. Forrest's sending. This magnificent Primrose was originally found by Mr. Forrest on the Mekong-Salween divide during his first expedition to Yunnan (1905), under number 479, but the specimen was incomplete and for long escaped identification. Fourteen years elapsed before he found it again, on the Salween-Kiu-chiang divide in the Tsarong. By then the field number had mounted to 18,875, and that is the type specimen. Two years later he found it once more on the Mekong-Salween divide, in open, moist situations on lush meadows. Farrer also came across the species on the Shing Hong Pass and the Moku-ji Pass in north Burma, and on his field ticket (No. 1,712) characteristically wrote of it as follows:—"This awe-inspiring beautiful species occurs abundantly in some of the highest glades, in enormous red masses of 'pseudo-bulbs,' coming up like clumps of any Rheum, and in style absolutely suggesting the Sonchifolia group till the flower transfers it to Sikkimensis." Mr. Farrer made the interesting observation that plants in bud were fragrant, and ascribed this to the farina with which the reverse of the leaf is dusted. The character of leaf-fragrance is not peculiar to P. Agleniana, for when Mr. Forrest found P. muliensis—then called P. Coryana—in 1921, he noticed that the under-surface of the leaves was peculiarly aromatic when rubbed.

So soon as Mr. Forrest's type specimen (of P. Agleniana) reached Sir Isaac Bayley Balfour's hands, that shrewd judge of plants realised that he had an exceptional plant before him, and paid his son-in-law, Sir Francis Aglen, the compliment of naming the plant after him. The writer happened to be staying at Inverleith House at the time, and is never likely to forget the memorable scene as specimen after specimen of Primula—many with their colours fresh, and all packed and arranged with the meticulous care associated with Mr. Forrest's exploration work—was laid out on the great table in the Regius Keeper's office, unflagging interest and excitement banishing fatigue as night passed to morning.

Jointly with Mr. Forrest, Sir Isaac published the species in 1920,* intending to elaborate the description later on. It has been left for his successor, however, to fulfil Sir Isaac's intention, and further material having come in, Professor Wright Smith and Mr. Forrest have now amplified the brief original description.† Reference to this shows that "the red masses of 'pseudo-bulbs,'" of Mr. Farrer's description, resolve themselves into red, fleshy scales of which there is an abundance at flowering time, giving a bulbous appearance to the base of the plant. In general habit and robust growth, Aglen's Primrose recalls that fine species which, when first received at Edinburgh, was named after Mr. Reginald Cory, and afterwards had to be reduced to P. muliensis, a Handel-Mazzetti species. When Captain Kingdon Ward found the last-named Primrose in 1921, he ticketed it as "the finest Primrose I have ever seen, a truly magnificent Nivalid."‡ Later he wrote that "he had never seen so wonderful a Primula, opulent, glowing and a much pinker pink than P. rosea."§ In his estimation of this remarkable species, Mr. Farrer was divided between it and P. sonchifolia as the queen of the race, for he wrote that "if we can get this Primula into cultivation and keep it there, it will, indeed, have no rival except P. sonchifolia."

To this remarkable trio of Primula species—P. Agleniana, P. muliensis and P. sonchifolia—may be added a fourth—P. ingens||—which we may hope to see in cultivation eventually. Mr. Forrest found it on Bei-ma Shan, in Yunnan, in 1921, under three numbers, 19,849, 20,397 and 20,617, in each case by streams in moist pasture or open meadows. It is a plant of from twelve to thirty inches in height, with fragrant flowers of shades of lavender and purple-blue, occasionally pale rose, and the explorer ticketed it at the time as "the most robust and one of the most beautiful Nivalid Primulas I know." In their consideration of the affinity of the species, Messrs. Smith and Forrest placed the plant as nearest to P. sino-nivalis and P. russeola. "In habit it has a strong resemblance to the white-flowered P. chionantha . . . . . . It should prove a magnificent species in cultivation if as amenable as P. chionantha."

A fifth new species with which cultivators will be glad to make acquaintance is P. falcifolia, which Kingdon Ward found in June, 1924, on the Doshong La in the eastern Himalaya—"a region of perpetual precipitation—at 12,000 to 13,000 feet, in open bogs and on steep alpine turf slopes facing south." The colour is described as Daffodil-yellow, often tinged with red. The explorer, who labelled this species the Daffodil

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* *Primulas for Garden and Greenhouse.* By E. H. M. Cox and G. C. Taylor; Dalau and Co., Ltd., London, 1928; 5s. net.

* *Farrer's Last Journey*, p. 43.

† *Farrer's Last Journey*, p. 41.

‡ *Notes* from the Roy. Bot. Gdn., Edinburgh, Vol. XV., No. LXXV, p. 255, 1927.

* *Notes* from the Roy. Bot. Gdn., Edinburgh, Vol. XIII, No. III, 1920.

† *Notes* from the Roy. Bot. Gdn., Edinburgh, Vol. XV, No. LXXV, p. 247, 1927.

‡ *Notes* from the Roy. Bot. Gdn., Edinburgh, Vol. XIV, No. LXVIII, p. 38, November, 1923.

§ *Gard. Chron.*, June 4, 1927, p. 394.

|| *Notes* from the Roy. Bot. Gdn., Edinburgh, Vol. XIV No. LXVIII, p. 44, November, 1923.

Primula of Tibet, and referred to it as unique, because, no doubt, of its colour, found it again on Doshong La, about 2,000 feet lower down, in October of the same year—"numerous clumps are in full bloom along the meadow-clad mud-slides above the great snow drift, facing south." In the earlier finding (No. 5,839), P. falcifolia "grew if not actually in bogs, in soil so drenched as to be quite water-logged, often on steep alpine turf slopes."[*] The flowers were very fragrant, but the October flowers (No. 6,238) had no scent. Growing in company with P. falcifolia both in June and October was another yellow-flowered species—P. Morsheadiana[†]—of which we may hope to hear more. Except that its flowers are a "pure butter-gold," it recalls P. serratifolia, a Delavay species published by Franchet in 1885[‡] and lately in cultivation. In their recently published enumeration of new species and varieties of Asiatic Primulas,[§] Messrs. Smith and Forrest refer to the unusual barring or striping of the pale yellow petals of this member of the Candelabra section. The peculiarity is clearly shown in the photograph (Fig. 65) whereon the bars, which are really orange, appear as a black star. P. serratifolia should be tried by those on chalk or lime, as it is a Lichiang species.

A Primrose on which hybridisers will doubtless lay their hands so soon as they can, is P. anisodora, a Forrestian species,[‖] and as its name implies, redolent of Aniseed. The flowers are a deep black-purple, and according to Sir Isaac Balfour, the darkest of all the Candelabra section—perhaps of all wild Primulas. That is a quality which will appeal to hybridisers, and as the species has been in cultivation (at the Edinburgh Botanic Garden) for ten years, it may not be long before the unusual colour is transmitted to a mixed strain. The Candelabra section usually intermarries freely and even P. helodoxa, which keeps to itself more than most of the section, is beginning to hybridise.

A new eastern Bhutan species which promises well is P. erythrocarpa (K.W. 6419), one of the mop-headed Denticulata section, with flowers of a peculiarly delicate shade of lavender, and apparently the good constitution of many of the group.

P. Florindae is a capital example of a sudden leap into popularity of a fine new plant, for though Captain Kingdon Ward found it so recently as June, 1924, it is already well-known. The explorer found it sometimes clustering so thickly in mountain streams as to divert them from their course, and the fact that it is something of an aquatic has been brought home to the writer recently, as a batch of plants in Miss E. Warrender's garden at High Grove, Eastcote, has twice been submerged under three or four feet of water for several days during the recent floods, without ill effect. It seems to grow well in this country in heavy or light soil, but in an average season is probably useless in dry places. In such situations a bed arranged with underground watering should suit it admirably, though there had been no need for adventitious water in the south during the past two summers. Connoisseurs for whom this Primrose is a little coarse of habit will find that a plant placed by itself and not crowded about with other things is of more interest than a mass; and those who will have none of it will find what, for convenience, may be called the miniature form, well worth while. This seems to come near to the Chinese P. flexilipes, and stands in much the same relative position to P. Florindae as P. pudibunda does to P. sikkimensis, or as the variety of P. microdonta called micormeres stands to the type. An important point for cultivators is that some of the P. microdonta group come into flower in late July in the south, and with P. Florindae and P. Littoniana, bridge the gap between the earlier species and the autumn-flowering P. capitata and P. Mooreana. As further species find their way into cultivation it may be that the flowering season of the genus will be extended through eight months of the year. Something of the kind has already occurred with Rhododendrons.

Another of the Sikkimensis section which Captain Kingdon Ward has re-introduced is P. microdonta, a Mekong species described by Franchet twenty years ago.[*] As Kingdon Ward found it on Drukla Gompa in the Tsangpo-Salween divide in south-east Tibet (No. 6,117), it has fragrant, nodding white flowers sometimes flushed with violet or sulphur, borne on stems from one to three feet high with from two to four whorls of flowers. It grows naturally in shady bogs, sometimes with P. Florindae. A new variety of P. microdonta called alpicola,[†] which Kingdon Ward found in the Rong Chu basin at 13,000 to 14,000 feet, looks as if it might prove a good garden Primrose. Captain Ward writes of the species and varieties[‡]:—"P. microdonta . . . . . is quite common in Kongbo province, on the north bank of the Tsangpo. There are yellow, white, violet, claret and other colour varieties, but the aggregate species tends to segregate into well-marked microforms."

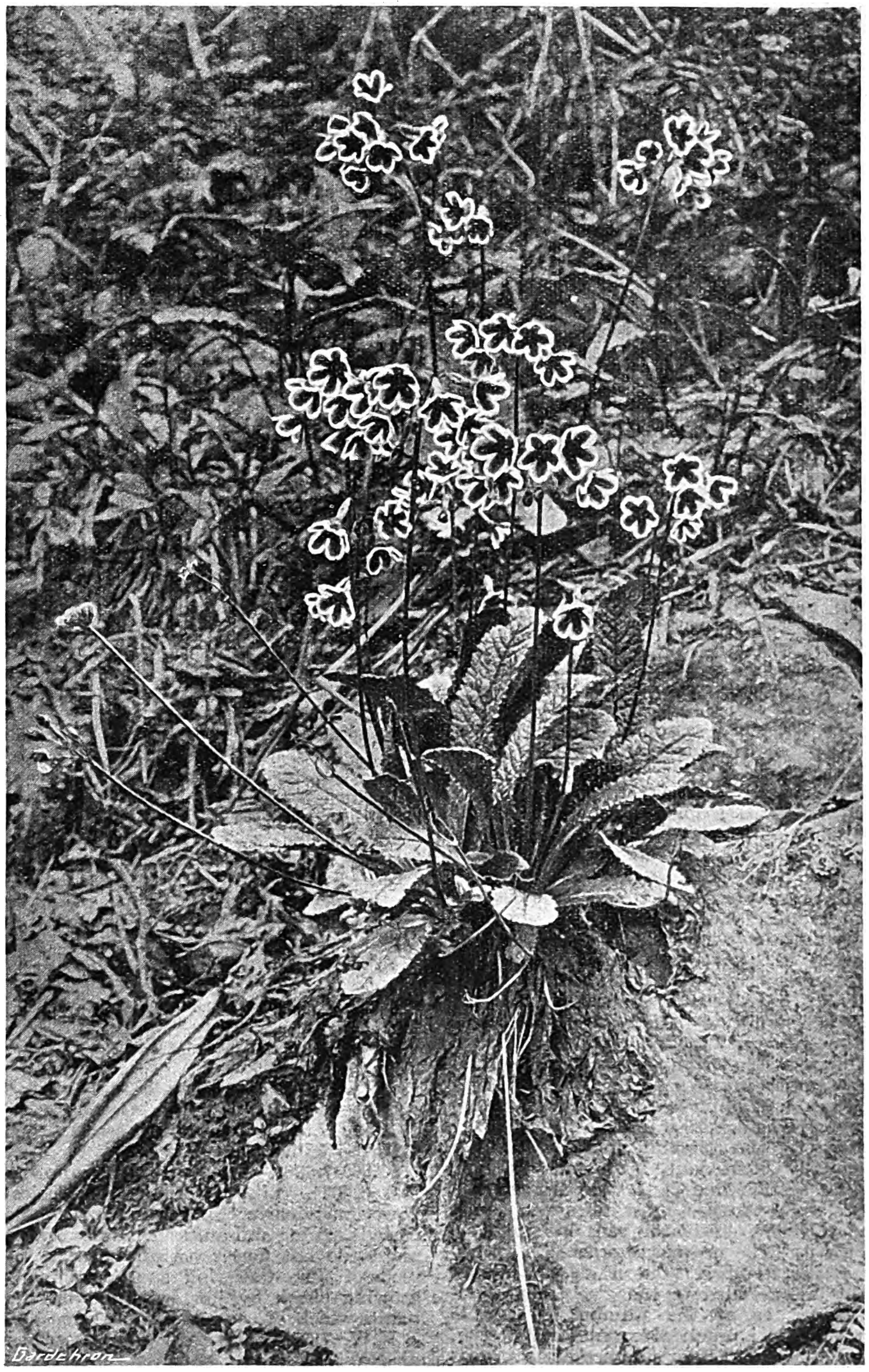

FIG. 65.—PRIMULA SERRATIFOLIA.

From a photograph taken in Yunnan by Mr. G. Forrest.

"The pale yellow-flowered plant of Tumbatse (var. alpicola), which grew in countless thousands in the moist meadows all up the valley, and which was extraordinarily fragrant (K.W. 5,746), we saw nowhere else. It flowers from mid-June onwards. At higher elevations and on the right bank of the Tsangpo it was replaced by coloured forms—violet, claret, and so on (K.W. 5,818). Farther north a variety with taller scapes and three or four whorls of flowers, yellow or white, was met with (K.W. 6,117). All of these were localised forms, but occurred in tens of thousands of plants: indeed, P. microdonta was probably the commonest Primula met with, usually growing by itself. In alpine regions on either side of the river P. microdonta is replaced by the dwarf yellow variety, P. micromeres, or by P. pudibunda, found everywhere in the dry-winter-alps, but not at the Doshong-La."

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[*] R.H.S. *Journal*, August, 1927, p. 232.

[†] *Notes* from the Roy. Bot. Gdn., Edinburgh, Vol. XV, No. LXXII, p. 70, February, 1926.

[‡] *Bull. Soc. Bot. France*, Vol. XXXII, p. 267.

[§] *Notes* from the Roy. Bot. Gdn., Edinburgh, Vol. XV, No. LXXV, February, 1927.

[‖] *Notes* from the Roy. Bot. Gdn., Edinburgh, Vol. IX, No. XLIII, p. 148, March, 1916.

[*] *Bull. Herb. Boiss. Sér.*, 2, VII, p. 526, 1907.

[†] W. W. Smith in *Notes* from the Roy. Bot. Gdn. Edinburgh, Vol. XV, No. LXXII, p. 85, February, 1926.

[‡] *Notes* from the Roy. Bot. Gdn., Edinburgh, Vol. XV, No. LXXII, p. 95, February, 1926.

Several colour forms of the variety alpicola with plum, purple and wine-coloured petals have flowered in gardens, and that observant cultivator, Mr. Charles Musgrave, has noticed that these plants droop perceptibly, even to the late afternoon sun—a clear hint to cultivators. Mr. Musgrave has observed, too, that some of the violet and purple-flowered forms of P. microdonta (K.W. 5,818) seem less partial than others to a moist soil, such as suits P. sikkimensis for instance; at any rate, at Hascombe Place they are happier on a shady north bank, where there is little moisture, than where moisture prevails. Provided it has ample moisture, P. Florindae, on the other hand, although it is a true woodland plant, seems sun-proof, which is more than may be said of that elegant old species, P. sikkimensis. P. microdonta grows at 11,000 to 12,000 feet, var. alpicola at 13,000 to 14,000 feet, and the further variety, micromeres[*]—a miniature edition of the second—at 14,000 to 15,000 feet, presenting the cultivator with three ascending forms, all of which we may hope will grow at or about sea-level! The present winter must have tried such plants highly, for except for a day or two now and again, they can hardly have been even moderately dry at the crown since October; the fact that some seem likely to survive the aqueous conditions is signal proof of the adaptability some plants possess.

Those very lovely but very different Primroses, P. nutans, P. Littoniana and P. pinnatifida, do not seem to be blessed with more than a modicum of adaptability, and the available stock of each in this country is likely to be seriously reduced by the atmospheric conditions which have prevailed for so long during the present winter. The drainage for these species cannot be too quick, but that again implies irrigation in dry weather, and shade in summer—a simple matter for clever cultivators but beyond the scope of average gardeners. Those of the latter who are interested in the cultivation of Asiatic Primroses should digest the sound advice to be found in Messrs. Cox and Taylor's all too brief chapter on the cultivation of Primroses. The difficulties are candidly set out along with suggestions for meeting them. The hint, for instance, as to the removal in good time of the slimy mass of decaying leaves of the larger-leaved Primroses is an important one, and is a point a clever grower would naturally grasp; all too often, however, it is overlooked, with the result that the crowns themselves are involved in the general mass of decaying humus, and the plants rot away.

As the authors point out, the main object of planting in semi-shade is to furnish the requisite quota of sunlight without drying out the soil. It has also the great merit that it prolongs the flowering period by several days. It is the same with Lilies, Dog's Tooth Violets and Trilliums. The composition of the soil is of paramount importance in the cultivation of Primroses, and while there seems little doubt that humus is distasteful if, indeed, not actually deleterious to the Nivalid Primroses, there seems equally little doubt that many of the Candelabra section find it to their liking. All the high alpine species must miss the snow, but the cleverest cultivator can find no substitute for it. The nearest approach to a substitute is the familiar "bit of glass." When the latter is extended to the glass roof of an alpine house, as at the Edinburgh Botanic Garden, we have a practical example of its value.

Messrs. Cox and Taylor's advice as to propagation and seed-sowing is the result of first-hand knowledge and may well be followed. Perhaps hardly sufficient importance is attached to the value of sterilised soil in the raising of seedlings, or to the advantage of sowing fresh seeds of the Asiatic species; stale seeds are certainly the cause of many failures with these species. In watering seeds and seedlings in pans, the watering can with rose, however fine, has yet to be produced which sooner or later will not drip on the pans. A hand atomiser of the type made by Messrs. Benton and Stone,[†] is far safer, but many experienced seed-raisers prefer to water from below. *A. Grove.*

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[*] W. W. Smith in *Notes* from the Roy. Bot. Gdn., Edinburgh, Vol. XV, No. LXXII, p. 86, February, 1926.

[†] "Enot" pneumatic sprayer No. 1,807.

BURMESE PRIMULAS, 1926.

(Concluded from page 84.)

K.W. 7,080. Primula cycliophylla, § dryadifolia.—A beautiful, crimson-flowered, cushion-forming perennial, like P. dryadifolia itself. Rare, and confined to the limestone range at 14,000 feet or more. Seeds were collected, but small hopes are entertained of the plants surviving.

K.W. 7,097. Primula sino-purpurea, § nivalis.—A few plants were found on the Tibetan side of the range only, thus linking up the Chinese forms with the Tibetan form collected in 1924.

K.W. 7,107. Primula chungensis, § candelabra.—Confined to the Tibetan side of the range, where it was met with some distance down the valley in mixed forest at about 11,000 feet altitude. The species thus extends without a break from Tibet to Yunnan.

K.W. 7,132. Primula sp. § muscarioides?—Found in fruit, and a few seeds were collected. Confined to the Tibetan side of the range, on boulders at 9,000 to 10,000 feet. Possibly it is P. atropurpurea, of the Denticulata section, or a new species.

K.W. 7,133. Primula sp. § auriculata.—Found in fruit only, with the last. There is no clue to its identity, but it is a Tibetan plant, and was not found in the Seinghku valley. It may be a new species.

K.W. 7,175. Primula capitata, § sphaerocephala.—One of the innumerable micro-species, which has received a name all to itself, P. crispata. It scarcely deserves the honour. Perhaps the only species common to the valleys on both sides of the range.

K.W. 7,226. Primula capitata. (*See* No. 7,175.)

K.W. 7,227. Primula firmipes, § sikkimensis.—A small round-leafed, yellow-flowered species, which flowers very late, about August. Plants may be found in flower up to October. Fairly abundant in one particular gulley.

K.W. 7,228. Primula siphonantha, § soldanelloides.—A curiously meek, frail and pale species, which is new. The wan violet flowers are never more than three or four, and are often reduced to one. Fairly abundant on the turf banks of one particular narrow, stony gulley, where, I believe, I collected every single plant there was, some 250 in all. It resembles P. Cawdoriana in some respects, though it is not such a good plant as that; on the other hand its situation suggests that it might be a little less exacting under cultivation.

K.W. 7,483. Primula eucyclia.—Fruit of No. 6,822.

K.W. 7,498. Primula Aglemana.—Fruit of No. 6,820.

K.W. 7,499. Primula prenantha. Fruit of No. 6,875.

K.W. 7,507. Primula capitata. (*See* No. 7,175.) Still in flower in October.

K.W. 7,512. Primula firmipes. (*See* No. 7,227.)—Still in flower in October.

K.W. 7,536. Primula melanodonta. (*See* No. 6,901).—Like certain other species which flower fairly early, this Primula has two flowering periods, spring and autumn. Probably the same plants do not flower twice, since I collected seeds of June-flowering specimens in October, growing cheek by jowl with October-flowering plants which, of course, did not ripen any seeds.

K.W. 7,551. Primula siphonantha.—Fruit of No. 7,228.

K.W. 7,579. Primula Genestieriana.—Fruit of No. 6,910.

K.W. 7,590. Primula silaensis.—Fruit of No. 6,940.

Of the thirty-one species enumerated above, seven are new (not counting the doubtful 7,132 and 7,133) or nearly twenty-five per cent. The interest of the collection, however, lies rather in the light it throws on the distribution of species and sections between the Himalayan ranges and China, than in endemic species.

Of the twenty-four species previously known, three—P. Wattii, P. prenantha and P. muscoides are known only from Sikkim, and this extension eastwards probably marks their furthest limit in that direction.

One species, P. rhodochroa, was previously known only from Tibet, where it was collected above the gorge of the Tsangpo in 1924.

Four species, P. sikkimensis, P. sino-purpurea, P. chungensis and P. capitata, are widely distributed in one microform or another both east and west of this locality.

Two unidentified species are of doubtful distribution, and only two, P. bella and P. Wardii, extend any distance eastwards into the drier regions of Yunnan, without being known also from the drier regions to the west.

The remaining twelve species, or fifty per cent., are known from a little further east, but do not extend beyond the Mekong gorge; that is to say, they are typically wet alpine species, or, as I have called them elsewhere, Indo-Himalayan alpines.

We may, therefore, conclude that the alpine flora of the Seinghku valley is predominantly Indo-Himalayan, a conclusion borne out by the fact that no fewer than four species are peculiar to the Tibetan side of the range, and that of these four, two at least are found far to the east also, in the drier districts of North-west Yunnan. These are Sino-Himalayan species. *F. Kingdon Ward.*

THE QUALIFICATIONS OF AN IDEAL PARK SUPERINTENDENT.[*]

(Concluded from p. 106).

The management of men is not a duty which is confined to Park Superintendents, and the same methods that produce successful results in other callings will be required. Firmness, tempered with sympathy and accompanied by a word of appreciation for good work should bring the respect to which a head is entitled. Without keeping too much aloof so as to lay himself open to a charge of snobbishness, he must not be too familiar with his staff. He will require all his wits to get the best out of his men, and as labour forms the greatest proportion of parks expenditure, success in this particular will be worth striving for.

A Park Superintendent, in common with other public servants, will have great opportunities for fostering education, and it will thus be within his power to give pleasure and instruction to those who are unable or disinclined to play games. Mention has already been made of the necessity for variety in his bedding-out schemes; he must be a pioneer in the horticultural world, ever bringing before the public new floral beauties and reviving old but forgotten favourites. Each uncommon plant that he introduces will be a centre of interest, especially if it is labelled. Much might be said upon this subject of labelling. I know its difficulties, but I also know something of its educational value. I have discussed this matter with many Superintendents to try and discover what was their rooted objection to adopting a method which seemed to have such obvious advantages from the public point of view. The reasons given were that the labels, if of lead, were stolen, and if celluloid were used to overcome this temptation, they became discoloured or were burnt. The juvenile public amuse themselves by removing them, or carefully changing them, and the adult public, having been educated up to the pitch of recognising an attractive plant, appropriate it for the purpose of giving it closer study in their own gardens. These set-backs are very disheartening, but on the other hand, a Superintendent is amply repaid when he sees an intelligent observer busy with his notebook and pencil.

During late years it has been the practice, introduced by Mr. Hay, of Hyde Park, of having borders reserved for one particular flower, and his Dahlia borders have now been copied in many parks. Other plants have been treated in the same fashion, and we now have Tulip, Aster, Delphinium and Rose borders, to mention only a few. This system is capable of great extension, and borders of annuals, flowering shrubs, foliage plants, etc., might be laid out and have the double advantage of stimulating horticultural education and fostering trade, for an enthusiastic amateur having seen a good floral novelty will be anxious to secure it. Each specimen should be properly labelled in a neat, but not obtrusive way, so as to avoid the formal dreariness so often associated with botanical beds. You will probably have seen in the Royal Parks the notices giving the history of some of the plants which have been displayed at these flower borders. On a recent visit to one of our most prominent Superintendents, I was pleased to find his office walls decorated with a complete framed set of these histories of flowers—a striking testimony to their usefulness.

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[*] A Lecture delivered by Mr. F. W. Parker, F.S.I., Second Officer, Parks Department, London County Council, on January 17, at a meeting of the Association of Parks and Botanic Gardens Superintendents.

Other opportunities for furthering nature study will be found in the bird aviaries, and in larger parks the deer enclosures. These latter take up a good deal of space and naturally can only be provided in extensive areas, but in a smaller enclosure it is possible to have kangaroos or wallabies, rabbits, guinea-pigs, turkeys, and fowls of different breeds. Such a collection is found at Clissold Park, Stoke Newington, and is a great factor in dispelling the ignorance of the town dweller with regard to country life. A simple set of meteorological instruments is also recognised as a proper adjunct to a public park.

In order to be in a position to educate the public, the Park Superintendent must by no means neglect his own education. He must be up-to-date in every department of his own domain, and, in order to be able to supervise his staff satisfactorily, must be competent to perform every detail himself, and so be qualified to instruct others in their duties. He must be scrupulously careful, *e.g.*, in the writing of his labels, so as not to convey inaccurate information. However exacting his duties, he must find time to visit other places, and observe other methods of doing things. Visits to the regular horticultural shows and to such well-known institutions as Kew Gardens and Wisley will help in this direction. He must contrive, by hook or crook, to peruse current horticultural literature and to consult standard works in the libraries. I take it that one, if not the most important, of the objects of founding the Association of Parks and Botanic Gardens Superintendents was to improve the knowledge and status of Park Superintendents by the interchange of ideas, and it is hardly possible for a body of experts to meet and discuss matters common to their profession without some of them being the wiser. New methods and labour-saving devices are continually being introduced, and the ideal Superintendent, anxious to produce the best results at the smallest expenditure, must be ever on the look-out for improvements. Motor traction, which has revolutionised road transport has its influence in the parks. Hand machines are giving way to motor-mowers, single-cylinder machines are being replaced on larger areas by triple mowers, and on golf courses by quintuple mowers drawn by tractors. The donkey-cart, such a familiar sight in Victorian parks, is relegated to the scrap heap. Gravel paths are now tar-sprayed, and on every hand there is development and progress, with which the modern Park Superintendent must keep abreast.

To sum up then, my ideal Park Superintendent must be a trained horticulturist, with a gift for management and organisation, and, if not a sportsman himself, must be willing to take an intelligent interest in games and other recreations. He must be able to keep accounts, control staff, deal with the public, and maintain a high standard of efficiency in himself and his work by education and observation.

You will probably ask me—where is this paragon to be found, and what method of training should he undergo in order to fit himself for these multifarious duties? He must begin young. If the foundation of a good education has been laid he will be able to surmount most of the difficulties he will have to meet. Assuming he has had this education, or if for any reason he has not, and is willing to educate himself out of working hours, he should serve his apprenticeship under a good head gardener in private service. He would there learn orderly methods of working, and gain an insight into all the routine of horticulture. The estate should not be too large or too small. In the former case he would run the risk of becoming a specialist instead of an all-round man, and in the latter case he would miss some of the branches of work which he would require a knowledge of later on. He should then aim at improving his knowledge by entering a good nursery, where trees, shrubs, Roses, hardy and bedding plants are raised, or what might even be preferable, obtain admission to Kew Gardens or some similar establishment as a student, so as to gain more scientific training. The educational opportunities of such a place are boundless, and being thus equipped, he should find no difficulty in obtaining a footing in the public service, in which his promotion should be assured. An ambitious man would probably not be content to remain many years in the same private service, and unless he had good opportunities of qualifying in every phase of horticulture he would make changes in order to secure a complete training. Having entered the public services, he must not rest on his oars, but put into practice the methods I have already advocated for improving his knowledge and experience. He must continue his studies, not only in horticulture, but in kindred subjects, such as landscape gardening and design, forestry, geometry, land surveying, etc. If he is fortunate enough to have access to a private garden or greenhouse where he can experiment on his own account, so much the better, and he will learn by his failures as well as by his successes. There are many certificates and diplomas which he must try to gain by study and practical work, and the obtaining of these, provided his knowledge is not solely theoretical, will be another aid to climbing the ladder of promotion. There are so few outstanding men in public service, that perseverance, devotion to duty, and a willingness to learn must reap their reward, and lead to the goal of everyone's ambition in public service, that of being an Ideal Park Superintendent.

MESEMBRYANTHEMUM.

12.—GLOTTIPHYLLUM, HAW.

ADDITIONAL SPECIES.

(*Continued from page* 49).

G. regium, N. E. Br. (Fig. 66.)—Growths, as received, erect, forming clumps, each with 1–2 pairs of leaves, which, in the younger stages, are closed together so as to resemble a large beak of a bird and perfectly erect in the specimens seen; the larger leaf of each pair varies from 1–4 inches long, 6–11 lines broad and 6–10 lines thick at the base, the other leaf being 4–8 lines shorter and not so thick, but according to Dr. Muir these dimensions may be far exceeded, as he stated that he found leaves on wild plants in a very dry season up to six inches long. They are flat, or the smaller leaf slightly convex on the face, and there gradually tapering to a subacute apex in the larger leaf, and to a rounded apex in the smaller one. The larger leaf is of about the same thickness throughout, rounded at the apex in side view, rounded on the back at the lower part, and compressed and obtusely keeled at the upper part, while the smaller leaf is usually thinner and sometimes flattened, and at others keeled at the apical part; surface smooth, without the transverse cells that some species have, glabrous and without microscopical cilia on the edges, light green, suffused with red where exposed to full sunshine. Pedicels 6–18 lines long, longer when in fruit. Calyx very unequally 4-lobed; the larger lobes 9–10 lines long and 6–7 lines broad, ovate, acute, keeled on the back, without cilia on the keel; the smaller lobes 5-6 lines long, orbicular, with broad, white, membranous margins and a dorsal point. Corolla only seen in a withered condition; petals 10-11 lines long and ½–1 line

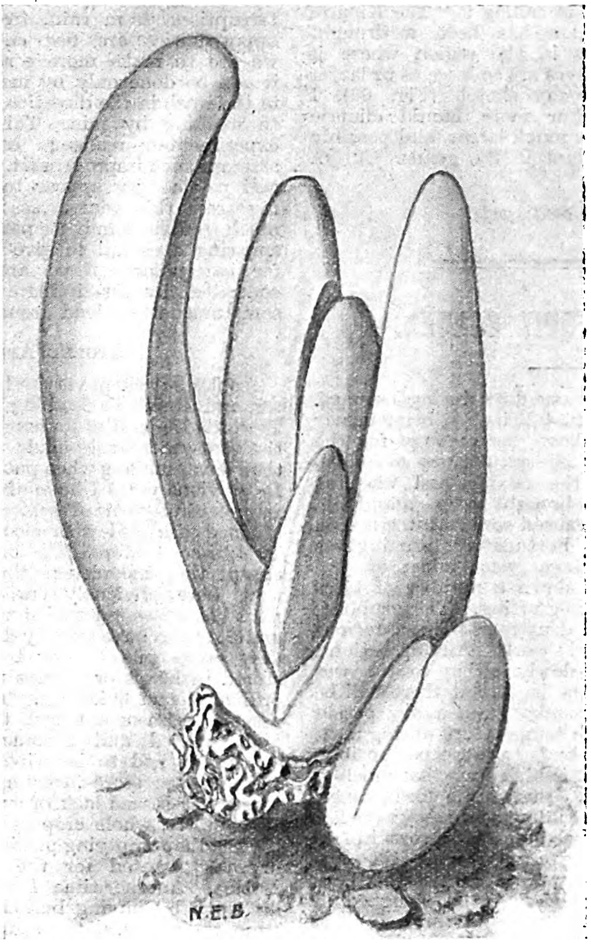

FIG. 66.—GLOTTIPHYLLUM REGIUM, N. E. BR.
Natural size; as received.

broad, linear, obtuse, yellow. Stamens pale yellow. Stigmas 8, not in a fit state for describing. Capsule, when closed, 9-10 lines in diameter, obconic, with 8 sutural ridges 2½ lines high on the otherwise flattish top, and with 8 valves and cells; valves suberect when expanded, and the capsule then 13–14 lines in diameter, pale ochreous; expanding-keels half as long as the valves, widely separated at the base and diverging, with acute edges, dark brown, without points or marginal wings; cells acutely roofed with stiff cell-wings and with a large pallid tubercle at the opening. Seeds ¾-line long, ovoid, with a slightly incurved point at one end, tuberculate, with the tubercles on the back, longer than broad and papilla-like, brown.

Oudtshoorn Division: On stony plains near the Gamka River, Muir 4192!

This is the most striking species of the whole genus that has yet been discovered, and I think its discoverer is right in calling it "The King of the Genus." As there has been a drought for about two years in the region where it grows, and yet the leaves are so large as or larger than represented in my sketch (Fig. 66), I anticipate that in our more humid climate they will become very much larger, and possibly prove to be the largest in the genus. *N. E. Brown.*

(*To be continued*).

MARKET FRUIT GARDEN.

Rain fell on twenty-one days during January, the total precipitation, 4·26 inches, being nearly an inch-and-a-half above the average for the month at my place. The ground was so sodden that such work as the carting and wheeling on of manure was brought to a standstill. Rain and wind also caused serious interruption to winter spraying. Fortunately, pruning was possible and advantage was taken of the opportunity to head down a number of trees in preparation for top-grafting. The grubbing of trees in overcrowded parts of the plantations also provided useful work. All operations, however, proceeded slowly owing to the wet and muddy state of the land, and there will be heavy arrears to overtake when a dry period does occur. The high temperature during most of the month caused buds to move perceptibly, giving warning that it is high time that much of the work was finished. Bush fruits, for instance, have remained all the winter just as they were left after the weeds were hoed out of the rows in late autumn. The spreading of manure has still to be done on a considerable area, after which the alleys between the rows will have to be ploughed in order to cover the manure and throw a little soil up to the bushes to replace that scraped off with the weeds. As was expected, the plentiful crop of weeds hoed off and left in heaps down the alleys has diminished during the interval, much of the rubbish having rotted. There should not be much difficulty in ploughing in the comparatively few weeds that have survived, so that the plantations will start the season fairly clean. It is time that all this was finished; but the conclusion of winter spraying with tar-distillate wash is still more urgent.

Winter Spraying.

There could hardly have been a worse winter for spraying. In order to get the work done at all it has been necessary to take advantage of every brief fine interval; and on very few occasions have the trees remained dry for more than a few hours after spraying. In these circumstances it will not be wise to rely too much on getting the full normal benefit from tar-distillate wash in the way of insect control. In this connection a report from the Long Ashton Research Station, which appeared in the January issue of the *Journal* of the Ministry of Agriculture, makes rather disquieting reading. Trials carried out at the Station, and supported by evidence from other sources, suggest that rain following the application of tar-distillate wash, even if the weather is dry for twenty-four hours after spraying, causes a lowering of the effectiveness of the wash. This does not appear to be due to the failure of any possible dessication effect, but to the direct washing action of rain. Whilst I do not for a moment suggest that the figures secured at the research station are wrong, I must say that I have never so far known tar-distillate wash to fail me, the control of aphis and psylla always having been practically complete.

It is my practice to spray again if rain falls before the wash has had a chance to dry on the trees, but to consider the operation satisfactory if the trees just have time to dry. In our climate it is impossible to hold out for even twenty-four hours of dry weather after spraying. Where there is much spraying to be done, there is nothing for it but to take advantage of every possible opportunity that occurs during December, January and February. With interruptions from rain, frost and wind, these opportunities are few enough. If therefore, we are to make more certain of good results it can be done only by means of improvement in the wash in the direction of greater resistance to washing by rain. This the Long Ashton experimenters realise; and they propose to attempt such improvement. Fortunately, aphis and psylla eggs appear to be very scarce on my trees this winter, so I do not anticipate much trouble from these pests, even if the winter spraying does fail to give its full benefit. As for caterpillars, these are never completely controlled by tar-distillate; so I always use some arsenate of lead around blooming time.

Stored Apples.

Apples have kept very well during the past winter, and Bramley's Seedling paid well for storing. Towards the end of January, in a local market, the first-grade fruit made 5s. per bushel more than it was making when put away in the autumn. In previous years I have always had the Apples very carefully sorted before storing, only those of good size and with clean skins being kept. This time I stored the crop just as it was, except that the pickers threw out any Apples that were obviously cut or damaged. This plan has answered well, for the small and low-grade Apples have exactly doubled in price since they were put away. I packed first those stored in heaps or clamps under straw, in two ordinary farm buildings. There were very few rotten specimens amongst these, but the fruit had sweated and become somewhat messy, so that it had to be wiped—a slow business. I shall never store in clamps again. The only reason for it was lack of sufficient accommodation for the whole crop in the fruit room, and the need for emptying picking boxes, which were urgently wanted for the gathering of other Apples. Another time I should get over the difficulty by buying bushel boxes to pick and store the fruit in, the same boxes to be used eventually for packing.

In the air-cooled store, to which reference was made in a previous article, the Apples kept perfectly. They were obviously less mature than those in the heaps in ordinary buildings, and would have kept in good condition for much longer. All these, by the way, were in boxes. I should not have sold them so early if I had not been advised that it was probably the best time to get rid of them, American Apples being rather scarce and large quantities of Australian and New Zealand fruit due to arrive later on. I shall, however, keep a few just to see how long they can be stored under these conditions. During the cold spell in December it was an easy matter to keep the temperature of the air-cooled store down nearly to freezing point, but it soon rose again. Without something very special in the way of insulation in the walls and ceiling it is evidently impossible to maintain a temperature below about 40° in an air-cooled store in the south of England. This temperature, however, appears to be quite satisfactory. Judging from my own experience, and still more from that of others who have used air-cooled stores for several years, I do not think there is the least need for growers to go to the expense of cold storage (refrigeration) simply to keep Apples through the winter. But cold storage scores during the summer and early autumn, when it may be employed for holding early varieties, which often begin to lose condition before they can all be packed.

Reversion in Black Currants.

When Mr. A. H. Lees published his method of detecting reversion in Black Currants, I was delighted to think that it would enable me to rogue my bushes with ease and certainty. It will be remembered that his contention is that, if less than five sub-main veins are present on each side of the main vein in the central lobe of the leaf, the leaf is reverted; if five or more, the leaf is probably normal. If the margin on both sides of the central lobe is finely-toothed and if from four to eight of these teeth do not each receive a sub-main vein, the leaf is almost certainly normal. If, however, this portion of the margin is coarsely toothed, and if less than four of the teeth do not each receive a submain vein, the leaf is reverted to some degree. This seems simple enough; but I soon found on trying to put the test into practice, that its rigid application brought suspicion on almost every bush, and that many doubtful cases occurred. I concluded, therefore, that it was a method suitable only for the research worker and not for the ordinary grower, and fell back on the appearance of the bloom buds, a simple test in the case of varieties of the French group, but difficult with others. Now Mr. J. Amos and Mr. R. G. Hatton, of the East Malling Research Station, have swept away all doubts and difficulties in connection with Mr. Lees' method by a contribution which they made to *The Journal of Pomology* (Vol. VI, No. 3). Having read this, I am quite looking forward to the rogueing of my Black Currants this season.

From the practical point of view, the most important part of this article is summed up in the following paragraph: "A normal Black Currant branch in June will almost universally consist of one or more leafy vegetative shoots which have developed from the buds formed in the previous season, and situated chiefly towards the top or the base of the previous year's wood. These are the shoots on which to concentrate in order to study either normal or abnormal characters. The rest of the branch will consist in the main of short lateral growths and fruiting spurs, which have arisen from the buds of the previous season, situated on the middle portion of the previous year's wood. The leaves on these spurs and on the short laterals are very different in character from the fully developed leaves on a strong-growing shoot, and reliance on them has not infrequently misled the grower into thinking that he has reversion. Lastly, not infrequently small leaves—so-called axillary leaves—develop at the bases of the larger leaves. These, even on a perfectly healthy branch, are very irregular in form, and often unnecessarily arouse suspicion. The grower can safely ignore all these types of subsidiary leaves entirely in endeavouring to detect the disease."

We are further told that it is necessary to bear in mind a clear idea of the normal leaf characteristics of the particular variety to be dealt with. Whilst healthy leaves of the varieties Boskoop, Goliath and Baldwin rarely if ever have fewer than six sub-main veins, French Black, and to a less extent Seabrook's Black, have many normal leaves with only five sub-main veins on each side. In the French again, the number of teeth not receiving sub-main veins is rarely many; and leaves with so few as four of these must not be regarded as suspect. It is also useful to know that there are cases of what may be called false reversion. When the growing point of a shoot is injured, the secondary shoots which push out in consequence often show symptoms similar to those of reverted leaves. Very severe pruning, which causes growth to develop from dormant buds near the base of the bush, and a check from drought, both produce similar symptoms, which disappear as growth continues or in the following season. In such cases the cause is fairly obvious, and no one who knows what to expect is likely to be deceived. *Market Grower.*

VEGETABLE GARDEN.

THE CABBAGE.

In most establishments, continuous supplies of Cabbages are necessary for so great a part of the year as is possible, and these may generally be maintained if a careful selection of varieties is made, and the seeds are sown at intervals. For early supplies, the small, quick-hearting varieties should be relied upon; seeds of these should be sown now in boxes of fine soil, and placed in a warm greenhouse or frame. Sow them thinly and cover the boxes with a piece of glass to conserve the moisture. They will soon germinate, and when large enough to handle may be pricked out, about three inches apart, into frames, in good, fairly fine soil. Water them in, keep the frame fairly close until the young plants are established, then give them plenty of air on mild days. Cover the frames at night during frosty weather, and occasionally stir the surface of the soil with a pointed stick or label. So soon as the plants touch one another they will be ready for transference to the open ground; provided they are well-hardened they will take no harm from slight frosts.

The best place for these early Cabbages will be in a warm, south border, if available. Make the soil firm and plant them about fifteen inches apart. Lift them carefully with a trowel so that each plant has a ball of soil round the roots, plant firmly, and rake the ground over as the work proceeds. They should not require watering, as the ground at that time of the year is usually moist enough. A little soil should be earthed up to them after a time, to keep them steady, and beyond keeping them hoed regularly they will not require much attention. Treated thus, firm heads should be ready for cutting in the early summer, when the autumn-sown plants are getting past their best.

The next sowing should be made in a frame placed on a mild hot-bed. The seeds should be sown thinly and watered in, and the frame kept close until the seeds have germinated. Prick the young plants out into skeleton frames and, if the weather is dry, water them in with a rosed can. When large enough, plant them out eighteen inches apart each way in a well-dug and manured piece of ground, each plant being inserted up to the bottom pair of leaves. They may require an occasional soaking of water if the ground is light and the weather is hot and dry, but this will not be necessary if the ground was well prepared during the winter. Time spent during the winter on double-digging or trenching in the vegetable garden will more than be repaid during the summer.

About a fortnight after this sowing another may be made outside in a cool border. The seed-beds should be covered with a fish-net to keep birds off. If the seeds are sown thinly, the resultant plants may be lifted carefully and planted directly into their permanent quarters and watered in. They will not require much attention beyond keeping them clean, and will provide excellent heads for autumn use.

For even later use, seeds of quick-maturing varieties of Cabbage may be sown in August in drills about a foot apart. The seedlings should be thinned to that distance apart, and earthed up as growth proceeds. They should, of course, be grown in a warm part of the garden, if such a place can be spared.

The varieties listed as Coleworts and Christmas Drumhead are very useful for maintaining a supply well into the winter, and two sowings of each of these may be made, one early in June, and one during the third week. Sow the seeds in drills in the open, plant out in the usual manner, and keep the rows well hoed to promote free growth. These are both very hardy, and large quantities of both should be planted. The spring Cabbages are always appreciated. Two sowings should be made, the first early in August and the second about three weeks later, in skeleton frames or in the open ground. So soon as the seedlings are large enough, plant them out about eighteen inches apart with two feet between the rows, in a firm piece of ground. Water them in well to settle the soil, and give a dusting of well-seasoned soot during showery weather; hoe around them frequently, and before the winter sets in, earth them up. A few plants should be kept in reserve to fill gaps. They will not require much attention before they start growing in the spring, when they may be given a light dressing or two of nitrate of soda. It is essential that these Cabbages should be planted in firm, but not over-rich ground, otherwise they will bolt. This trouble will sometimes occur with the earlier-sown plants, therefore it is advisable not to rely on one sowing. I have only mentioned two varieties that are excellent for winter use as most growers have their preferences for spring, summer and autumn varieties. *R. W. Thatcher.*

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents].

Chimonanthus fragrans.—With reference to the letter of Sir William Lawrence in your issue of January 28, I should like to point out, in contrast, our experience of the above-named beautiful shrub. We have a large tree, probably nearly one hundred years old, trained to the south side of our house, and incidentally up to the back of the kitchen chimney. It is covered with bloom every Christmas, and is pruned well every year after flowering. It seeds freely and is easily raised from seeds, a few of which I would gladly send to any one who might care to sow them. *(Mrs.) M. Howard Vyse, Stoke Place, near Slough.*

Iron as a Plant Tonic.—In reference to your correspondent's letter on this subject (p. 87), it may be of interest to know that the addition of iron salts is practised amongst some growers. For instance, in the cultivation of Hydrangeas, iron is often added in one or other of its soluble forms in order to give a definite colour to the blooms. In the commercial cultivation of Cucumbers and Tomatos salts of iron are sometimes applied in addition to organic fertilisers; it is given to Cucumbers to impart a deeper colour to both foliage and fruit. A diluted solution of sulphate of iron is often applied to a freshly laid mulch; this fixes the ammonia in the form of an iron ammonium salt which ultimately becomes washed into the soil. Small doses of iron salts applied to certain crops are very valuable under certain circumstances, and it is surprising that these valuable iron tonics are not more widely used, because plants, like human beings, require this essential ingredient, although most soils contain a sufficiency for the average plant's requirements. *Theodore Parker.*

Superphosphate and Seeds.—I have read with interest the controversy anent the use of superphosphate in the seed drills along with Peas at sowing time. The sowing of superphosphate in seed drills is rather a crude method of using that fertiliser. Farmers certainly do so use it, but they work on a larger scale than gardeners, and their methods are accordingly crude if sometimes very effective. A better distribution would be obtained by forking in the superphate before drawing the drills. If this method does not appeal to one who is short-staffed, then some fertiliser sown in the seed drills would be better than none at all, always provided that it is not used too liberally, and a cold wet spell of weather does not intervene, when the superphosphate might contribute to the general stickiness and help in this way to rot the seeds. In light, free soils, this is not likely to happen, but all soils are not light or free, and it is possible for seeds to rot in cold, heavy soils without the help of superphosphate. In the latter case I would advise greater care in applying the substance. With reference to the alleged damage to Potato sets, let me give my experience. About two years ago, I bought several tons of Potato seed sets and the farmer who supplied me put some of them (about 30 cwt.) in old manure bags that had been recently emptied. The Potatos in the superphosphate bags were in first-rate condition, although they remained in the bags for weeks. The Potatos in the other manure bags were all damp, sweating, sprouting and mouldy. I had some sets cut, and put a few into empty superphosphate bags, and they took no harm even though ten days elapsed before planting. When the sets had all been placed in the drills a mixture of superphosphate, bone-flour, sulphate of ammonia and muriate of potash was sown broadcast over them prior to covering them with soil. No doubt this is a crude method, but an effective one, as judged by results. This was done in Scotland, and is the general practice of many growers there. The theory is that the sulphate of ammonia starts the sets and quickens them into growth. I had evidence of that in the sprouted condition of the seed in the sulphate of ammonia bags. The potash needs no explanation; the bone-flour and superphosphate are supposed to make for better quality of produce, and therefore better seed sets, and add slightly to the weight of the crop. A well-balanced manure secures the best results. *G. Murray.*

Protecting Celery.—Some time ago I noticed in *The Gardeners' Chronicle* a suggestion to cover Celery with straw or dried Bracken. I wonder how many tried it and what their experience has been? About twenty years ago I was in a situation in Scotland where the head gardener tried it. A rope was stretched along the top of the trench and the straw was laid across it. It looked quite well until the wind began to blow, then we had a job gathering up the straw, but we replaced it, and after the straw became sodden it did not blow away so easily. The snow also helped to keep it down, but when it came to lifting the crop we found it had rotted worse than before! The damp straw had excluded the beneficial effect of sunlight and wind, and the humid conditions under the straw had ruined the crop. I find that if Celery is earthed-up well to a sharp apex to deflect the rain, and the trench at the side is deep enough to drain away the surplus moisture, it will keep good until the end of March or longer, provided it is good firm Celery. More drainage, a trifle less humus, a dressing of potash when in growth, and an open position will help to prolong the life of late Celery more than so-called protective coverings. *George Murray, Rockley Manor, Wilts.*

Hieracium villosum. — Despite the late Reginald Farrer's scathing criticism of the Hawkweeds as rock-garden plants, room should be found for, and a welcome given to, Hieracium villosum. It should be planted in a sunny spot on the rock garden, or preferably on a dry wall in full sun. There it will soon form a tuft of silvery-downy leaves, from which, in due course, six-inch, downy stems will rise bearing bright yellow flowers. Perfect drainage is essential as it is liable to damp off in wet winters, but where happy, it is a useful addition to our silver-leaved plants. *L. Le C. T.*

Birds and Fruit.—When I want to spend a rollicking evening I certainly shall not take Mr. C. Nicholson with me. What a kill-joy! Beer, tobacco, pheasant-shooting, and the eating of Doyenné du Comice Pears all come under his unsparing lash. I, at any rate, feel some gratification in having made him, as he terms it, "shout with laughter," for he seems to get very little enjoyment out of life. One more word and I have done; your correspondent has the audacity to claim, in regard to Pear Doyenné du Comice, that "there are plenty of others quite as good." This is either sheer ignorance or an acknowledgment that he has no palate. *F. Herbert Chapman.*

Montbretia (or Tritonia) rosea. — Seeing Mr. S. Arnott's recent article on Montbretia (or Tritonia), it may interest him to know that I have often raised Montbretia rosea from seeds but have, so far, never found the slightest variation in the seedlings. I have also tried crossing it with other Montbretias, but without success. *William Van de Weyer, Clyffe, Dorchester.*

SOCIETIES.

ROYAL HORTICULTURAL.

February 14.—No doubt induced by the Annual General Meeting which was held during the afternoon, there was a considerably increased attendance at the fortnightly meeting of the Society at Vincent Square on this date. The Fellows found a really good show awaiting them. Orchids were exceptionally numerous, and there were admirable collections of Cymbidiums, Calanthes, Odontoglossums, Cattleyas and other genera. The Orchid Committee recommended six Awards of Merit to novelties. The exhibits before the Floral Committee were varied and of considerable beauty. Alpines of merit were freely shown, and there were also exhibits of forced trees and shrubs, greenhouse Cyclamen, Freesias, Carnations and general greenhouse plants. This Committee also recommended six Awards of Merit to novelties. The Narcissus and Tulip Committee met for the first time this year, and although there were no awards given to new varieties, there was an excellent group of Tulips, while Hyacinths and Narcissi were displayed, mostly in association with other flowers. There was a magnificent collection of vegetables and a smaller display of Apples. Garden sundries were not admitted to this meeting, nor was there space for them, but Messrs. Malby and Co. showed excellent photographs, including many coloured plates, of flowers, plants and garden scenes.

Orchid Committee.

Present: Mr. C. J. Lucas (in the chair), Mr. Gurney Wilson (Hon. Secretary), Mr. Brooman White, Mr. Clive Cookson, Mr. Wilson Potter, Mr. Lionel de Rothschild, Mr. Fred J. Hanbury, Mr. A. McBean, Mr. T. Armstrong, Mr. Charles H. Curtis, Mr. J. Cowan, Mr. H. Alexander, Mr. J. E. Shill, Mr. A. Dye, Mr. Fred K. Sander, Mr. E. R. Ashton, Mr. S. Low, Mr. Robert Paterson and Mr. S. Flory.

Awards of Merit.

Cymbidium Erica Sander, Wyld Court variety.—This fine form has clear, light yellowish-green sepals and petals, and a white, green-rimmed, brown-spotted lip. The spike carried seventeen beautiful flowers, all admirably arranged on the arching stem. Shown by Sir Wm. H. Cooke, Wyld Court, Hampstead Norris.

Odontoglossum armainvillierense xanthotes var. Perfecta.—An exquisitely beautiful hybrid with finely formed white flowers set in delightful fashion on the spike. The flowers are not very large but of excellent substance. There is a small, deep yellow mark on the lip, and the disk is also deep yellow. Shown by Messrs. Charlesworth and Co.

Odontoglossum Thetis (Dusky Monarch × Solon).—A grand hybrid with big, rounded flowers of intensely deep purple-brown hue, irregularly edged with white along the fringed margins. The lip is of brighter brown, edged and tipped with white, and with a golden disk. Shown by Messrs. J. and A. McBean.

Cattleya Remy Chollet var. Bruges.—A superb Orchid with a big flower of lovely soft mauve colour; the large lip is deep purple at the apex and deep yellow at the throat, and the whole is margined with mauve. The petals are very broad. Shown by Messrs. Sanders.

Cymbidium Lilian Sander var. aurea (Erica Sander × insigne Sanderi).—This has very large flowers rather widely placed on the spike. The column is pale green-tinted yellow, with a few deep brown spots on the wide and frilled lip; the column is of deeper tint than the rest of the flower. Shown by Messrs. Sanders.

Sophro-Cattleya Clarinda var. Gloriosa.—A charming little Orchid that carried two shapely flowers of modest size. The sepals and petals are deep purplish-rose, the lip pink and mauve with a yellow, brown-marked throat. Shown by Messrs. Black and Flory.

Groups.

Captain Maldwin Drummond (gr. Mr. Leslie L. Smith), Cadland Park, Southampton, displayed a fine group of Cymbidiums—fine in extent and filled with well-grown plants of C. Alexanderi, C. A. album, C. A. roseum, C. A. Budhoni, C. A. McBean's variety, C. Castor, C. Pauwelsii, C. Miranda, C. Schlegelii, the yellowish C. Corona, C. Eagle, C. Sibyl and C. Titania. The group was especially remarkable for the wonderful collection of varieties of the beautiful C. Alexanderi.

Lady Haddon (gr. Mr. O. Hayles), Rossway, Berkhamstead, showed numerous freely flowered plants of Calanthe Veitchii associated with Cypripedium Leeanum and C. Ashburtonii.

Baron Bruno Schröder (gr. Mr. J. Shill), Dell Park, Englefield Green, showed three spendid spikes of the brilliant Calanthe Baron Schröder.

J. J. Joicey, Esq., The Hill, Witley, sent a pretty Lycaste hybrid between L. candida var. Lawrenceana and L. macrobulbon; it is named L. Phoebe, and has pale buff flowers, with brown spots on the apex of the yellow lip.

Messrs. Sander's big display was a most effective one and consisted chiefly of Cymbidiums, the bold arching spikes of these useful Orchids blending with Dendrobium Phalaenopsis in variety, Oncidium Cavendishianum, Vanda Kimballianum, and the handsome Cattleya Remy Chollet var. Verulam. A plant of the uncommon Scuticaria Steelii was also shown, with three flowers. A few of the Cymbidiums that attracted special attention were C. Venus, C. Fernley Sander, C. Erica Sander in variety, C. Ralph Sander, C. Plover, C. Nelly var. extraria—very chaste and beautiful, C. Lilian Sander, C. Pauwelsii, C. Mrs. Gratrix and C. Albatross—altogether a very fine exhibit.

A very bright exhibit, arranged by Messrs. Charlesworth and Co., contained delightful spikes of Odontoglossum Tityus, O. crispum xanthotes, O. Dalmatica, O. Minatour, O. Porthos, O. Penelope, O. Proteus, O. Purple Queen and O. Beau Brummel, Odontioda Metis, O. Alcantara, O. Dolosa, and the crimson-purple O. Gwendoline. Other interesting and beautiful plants were those of Maxillaria lepidota, Miltonia Lycaena, Dendrobium nobile var. Nora, Lycaste macrobulbon, L. Ballae and Platyclinis uncata.

The fine display made by Messrs. J. and A. McBean was greatly admired for its pleasing arrangement. Odontoglossums were conspicuously good, and included O. Radiant, O. Cumbe, O. armainvillieriense, O. crispum, O. crispum-Solon, O. Phena and O. Pescatorei. Odontioda Bohnhoffiana, Odontonia brugensis var. Distinction, Epiphronitis Veitchii, Cattleya Empress Frederick, Oncidium cheirophorum, and Cattleya Trianae var. The Premier (Cultural Commendation) were other fine things in a fine collection.

Messrs. Cowan were represented by an exhibit rendered beautiful by the many examples it contained of the white Cymbidium Gottianum; behind these were C. Swallow, C. Pauwelsii and C. Butterfly, while in front were Cattleya Vesta, C. Clotho, Odontioda Clotho II, O. Laura, Odontoglossum Gloriette, and some good Cypripediums.

In Messrs. Stuart Low and Co.'s group we were attracted by Sophro-Laelio-Cattleya Beta, Laelio-Cattleya Luminosa aurea, L.-C. Schröderae, Brasso-Cattleya Enchantress, Dendrobium aureum, Oncidium Edwardii, Saccolabium bellinum, and Restrepia striata.

Odontoglossum southgatense and O. Gloriette were well shown by Mr. J. Evans, Colwyn Bay. Dr. Craven Moore, Victoria Park, Manchester, sent the fine Odontoglossum Tyntesfieldiana, the beautiful Cymbidium Calignea (Gottianum × Castor), and some Cypripediums.

Messrs. H. Alexander, Ltd., brought up a charming plant of Coelogyne Mooreanae, Westonbirt var., Cymbidium Pipit, Westonbirt var., C. Plover, C. Ladybird and C. Miranda var. Amber. The yellow-flowered Odontoglossum Symax var. Canary was shown by Mr. Harry Dixon, together with a few Cypripediums.

Messrs. Armstrong and Brown submitted Cypripedium Helen II, C. Actaeus, C. Alcibiades var. illustris, Vanda Vandarum—now rarely seen—Restrepia striata, Cirrhopetalum picturatum and the handsome Odontioda Coronation and O. Bradshawae. Laelio-Cattleya Edgell was well-shown by Messrs. Black and Flory and represented by several good plants; with these were Sophro-Laelio-Cattleya Vulcan, S.-C. Clarinda, the interesting and pretty Burrageara Windsor, Odontioda Eton (Odm. Ruby × Oda. Zenobia), and some useful Cypripediums. A freely-flowered plant of Lycaste Ballae, shown by Mr. E. R. Ashton, Broadlands, Tunbridge Wells, was awarded a Cultural Commendation.

Floral Committee.

Present: Section A.—Mr. Henry B. May (in the chair), Mr. J. F. McLeod, Mr. Arthur Turner, Mrs. Ethel M. Wightman, Mr. H. J. Jones, Mr. William Howe, Mr. D. Ingamells, Mr. J. M. Bridgeford, Mr. A. E. Vasey, Mr. M. C. Allwood, Mr. R. Findlay, Mr. J. B. Riding, Mr. J. T. West, Major George Churcher, Mr. D. B. Crane, Mrs. Helen Lindsay Smith, Mr. Charles E. Pearson, Mr. G. W. Leak, Mr. Donald Allan, Mr. E. R. Janes, and Mr. W. D. Cartwright, (Secretary).

Section B.—Mr. Gerald W. E. Loder (in the chair), Mr. W. J. Bean, Mr. James Hudson, Mr. G. Reuthe, Mr. George Harrow, Mr. F. G. Preston, Lady Beatrix Stanley, Mr. W. B. Cranfield, Mr. E. A. Bowles, Mr. A. Bedford Mr. L. R. Russell, Mr. C. Williams, Mr. G. Yeld, Sir William Lawrence, Bt., Hon. Henry D. McLaren, Mr. R. C. Notcutt, Mr. T. Hay, Mr. R. D. Trotter, Mr. Charles T. Musgrave, Mr. Mark Fenwick and Mr. N. K. Gould, Secretary.

Awards of Merit.

Camellia rosaeflora var. flore pleno.—An especially graceful and decorative variety of the species, which has an uncommon history. According to the description which accompanies Fig. 5,044 in the *Bot. Mag.*, the grafted portion of a Camellia brought from China for the Horticultural Society by Potts, in 1822, died and the stock proved to be C. rosaeflora (type). Two years later a similar thing happened to a Camellia brought for the Society by Mr. J. D. Parks. The double-flowered variety bears plenty of rounded, deep blush-pink flowers rather more than two inches across. Shown by the Director, Royal Gardens, Kew.

Excoecaria bicolor.—Although a considerable number of species of this genus have been introduced to cultivation at various times, they are rare plants. It is a tropical genus, belonging to the Natural Order Euphorbiaceae, with poisonous, milky juices. E. bicolor, occasionally known as Croton bicolor, has opposite lanceolate-ovate leaves about five inches long by one-and-a-half inch, at the widest part. They are shining green above and a bright-reddish-purple beneath. The inconspicuous, greenish-yellow flowers are borne in short axillary spikes of twos and threes. It is an ornamental, warm greenhouse plant. Shown by Viscountess Bing of Vimy, Thorpe Hall, Thorpe-le-Soken, Essex.

Leptospermum scoparium var. roseum multipetalum.—We understand that this handsome shrub originated in the garden of the Rev. A. T. Boscawen. His specimen differed somewhat from that shown by Messrs. Robert Veitch and Son, but this was probably due to cultivation. The flowers are larger than is general in the species, being nearly an inch across, and of lilac-pink colour. The centres are made up of petaloid stamens, which give them a semi-double appearance. In the Exeter example the flowers were of a pale apple-blossom-pink colour, and the leaves had a grey tone, while the leaves of the Cornish plant were a dull green. It is an uncommon and desirable variety. Shown by the Rev. A. T. Boscawen, Ludgvan, Long Rock, Cornwall, and Messrs. Robert Veitch and Son.

Leptospermum scoparium var. roseum.—As a garden plant this is superior to the foregoing.

The rounded flowers measure almost as much across, and are of decided rose-pink colour. Shown by the Rev. A. T. Boscawen.

Primula stellata Hillside Blue.—A goodly basket of very floriferous plants was shown. The leaves are of P. sinensis texture and evenly serrated. The abundant spikes bear large flowers of a bright, violet-blue colour. It is an uncommon variety of decorative value. Shown by Leonard Sutton, Esq., C.B.E., J.P. (gr. Mr. T. Townsend), Hillside, Reading.

Saxifraga Burseriana Brookside.—This is an admirable variety of the well-known Saxifrage. The flowers, which are freely produced, are large, substantial and of pure milk-white colour. Shown by Messrs. Tuckers, Ltd.

Groups.

Forced shrubs in many collections added much to the general appearance of the exhibits. Messrs. J. Cheal and Sons staged tall standards of Prunus triloba fl. pl., and various Brooms, with bushes of Pyrus atrosanguinea, Prunus incisa, and Wistarias above dwarfer examples of Mollis and Ghent Azaleas, and also had a good exhibit of alpines and early spring flowers, including Muscari botryoides, Crocuses, Primula Wanda, Iris reticulata and Saxifrages.

Well-flowered bushes of Forsythia, Osmanthus Delavayi, Cornus Mas, and various evergreen examples, shown by Messrs. Waterer, Sons and Crisp, formed a fitting background to their collection of spring flowers, which included Iris stylosa, I reticulata, I. sindja-Reichi, Anemone fulgens annulata grandiflora, Crocuses and other flowers. The Misses Hopkins had a neat rockery planted with blue Primroses, Crocuses and Saxifrages.

A graceful group was arranged by Messrs. L. R. Russell, Ltd., with tall plants of Vitis Henryana, Pyrus spectabilis purpurea, Wistarias, Lilacs, Azaleas and Skimmias, and they also displayed well-flowered plants of Dicentra spectabilis. Adjoining these hardy plants they staged handsome examples of Aphelandra aurantiaca, Vriesia Duvalli, Epiphyllum Makoyanus and E. Russelianum.

A number of well-flowered bushes of Camellia varieties was shown by Messrs. Robert Veitch and Son. In addition to desirable double-flowered varieties, they included Kimberley, a single of vivid cardinal colour, and Flora, a good white. Erica australis Mr. Robert, E. codonodes, Acacia Hanburyana, Berberis japonica hyemalis, Rhododendron Nobleanum and Hamamelis mollis were also well shown.

In association with a good rock garden, Messrs. W. Cutbush and Son displayed various Pyruses, Prunuses, Forsythias, Wistarias and other shrubs, and planted, on a lower level, Crocuses, Adonis amurensis fl. pl., and Irises. Messrs. W. Wood and Son had good bushes of Prunus triloba fl. pl., Spiraea Thunbergi, and Forsythias, with Primula dentata and its white variety, Blue Primroses, Scillas and dwarf Irises.

Trusses of various early Rhododendrons were shown by Mr. G. Reuthe. The chief sorts were Mrs. H. Shilson, Mrs. Gill, R. barbatum Meteor, R. arboreum coccineum and R. Thomsoni × arboreum. He also set out specimens of Acacias, Sarcococca Hookeri, and various alpines.

With a back row of very floriferous bushes of Forsythia spectabilis, Messrs. Barr and Sons displayed an especially well-grown and attractively arranged collection of early flowers. There were neat batches of Narcissus nanus, N. minimus, N. cyclamineus, Crocus versicolor purpuratus, C. Sieberi, C. purpureus grandiflorus, C. Paulus Potter, Primula dentata superba and a good batch of Hyacinths. Messrs. Jeans and Trowbridge showed various Saxifrages, Irises, Ericas and dwarf Conifers. Messrs. Cashbourn and Welch had an attractive moraine planted with Saxifraga Elizabethae, S. Burseriana Brookside, S. Irvingii, S. oppositifolia splendens and other alpines.

A number of admirable plants of the white double-flowered Primrose, and the pretty lavender Primula altaica were displayed in a well-arranged rock garden exhibit by Mr. F. G. Wood, who also planted Pulmonaria saccharata, shapely little Irish Junipers and other appropriate subjects. The Rev. Rollo Meyer, Watton Rectory, Herts., contributed a large batch of Iris Cantab with I. reticulata which made an exceedingly effective display.

Excellent Saxifrages were shown by Messrs. Tucker, Ltd., who had admirably arranged breadths of S. Burseriana Brookside, S. kestoniensis, S. Burseriana tridentata and other desirable varieties. Messrs. R. Gill and Son had many branches of Rhododendron Cornubia which provided brilliant colouring. They also showed, in smaller quantity, R. Nobleanum album, R. argenteum and their "Poppy" Anemones.

A collection of Crocuses staged by Messrs. Sutton and Sons illustrated the value of the garden varieties for cool greenhouse decoration. The chief varieties were White Lady, Maximilian, Carusa, Lothario and purpurea grandiflora.

Especially meritorious greenhouse Cyclamen were arranged by Messrs. Blackmore and Langdon, who had very floriferous plants in baskets of distinct colours. The chief were Salmon King, Giant White, Scarlet King and Salmon Scarlet. With the Cyclamen they showed a large quantity of a good strain of Blue Primroses. Messrs R. and G. Cuthbert showed many good plants of Freesia refracta alba. Mr. George Prince grouped branches of the yellow Banksian Rose, with Fortune's Yellow and I. Zingari. The Misses Heathcote and Mr. B. Pinney showed Sweet Violets.

Adjoining their Carnations, Messrs. Stuart Low and Co. grouped large Camellias, Acacia Baileyana, various Azaleas, the dwarf, fragrant Gardenia citriodora and a few good spikes of Hippeastrums.

Messrs. Allwood Brothers were represented by a well-arranged exhibit of Carnation blooms of good shape and quality, the deep crimson Topsy, Red Laddie, White Pearl and Maud Allwood, a novelty of 1928, rich orange, being the outstanding features of the group.

Messrs. Stuart Low and Co. showed fine taste in the arrangement of their collection of several choice varieties. There were five vases of the beautiful pink Eileen Low, the pale pink Lady Daresbury, deep crimson Topsy and flame-coloured Brilliant, but perhaps the most attractive features of the group were Queen Mary, a sweetly-scented, rich violet-purple variety, and Melchet Beauty.

Another attractive Carnation display was arranged by Messrs. C. Engelmann. It contained fine blooms, tastefully arranged in stone vases, of the mauve Circe Improved, the beautiful yellow Saffron, Laddie, Topsy, White Pearl, rich crimson Dorcas, and exceptionally fine rich pink Master Michael Stoop.

A fine bowl of Carnation Mrs. A. J. Cobb, that was awarded the *Daily Mail* Gold Cup last year, was staged by Messrs. A. F. Dutton, Ltd. The blooms, that are deep crimson in colour and very fragrant, were in good condition and well-shaped.

Narcissus and Tulip Committee.

Present: Mr. E. A. Bowles (in the chair), Mr. Leonard Sutton, Sir William Lawrence, Mr. P. R. Barr, Mr. W. B. Cranfield, Mr. H. G. Hawker, Rev. Rollo Meyer, Mr. F. A. Secrett, Mr. J. S. Arkwright, Mr. Charles H. Curtis, and Mr. A. Simmonds (Secretary).

Groups.

Messrs. James Carter and Co. staged an attractive display of Tulips in the form of a bank, edged with moss, and with a background of Golden Thuyas, Cupressus and Cryptomerias. The Tulips, of which there were twenty or more early-flowering varieties, were tastefully arranged, and included such useful varieties as the orange-coloured General De Wet, the scarlet Brilliant Star, White Hawk, and the yellow Mon Tresor. Cramoise Royal, a rich crimson variety, the deep plum, rose-pink-edged La Remarquable, Thomas Moore Improved, and the orange-scarlet Prince of Austria occupied the centre of the group and acted as a foil to Keizer Kroon, the pale yellow and cream Brunhilde, Vermilion Brilliant, the small-flowered Prosperity, and the red, yellow-edged Duc de Berlin.

Messrs. R. H. Bath, Ltd., exhibited a mixed collection of Tulips, Narcissi, Hyacinths, Crocuses and Iris reticulata. Of the Tulips there were the popular William Copland, Le Notre, William Pitt, the rose-magenta Van de Neer, Mon Tresor and White Falcon. Daffodils were represented by the pale-coloured Lord Kitchener, the golden King Alfred, The Don, and Henry Irving, while the small perianthed types included the large-flowered Flame, the white, orange-centred Sunrise, and Orange Cup.

Fruit and Vegetable Committee.

Present: Mr. A. H. Pearson (in the chair), Mr. A. Poupart, Mr. P. C. M. Veitch, Mr. H. A. Prince, Mr. J. Basham, Mr. T. Pateman, Mr. F. Jordan, Mr. R. H. Hall, Mr. E. Neal, Mr. E. Beckett, Mr. E. Laxton, Mr. P. D. Tuckett, Mr. W. H. Divers, Mr. A. W. Metcalfe, Mr. E. A. Bunyard, Mr. J. G. Weston, Mr. C. G. A. Nix, Mr. G. F. Tinley, Mr. J. C. Allgrove, Mr. J. Wilson and Mr. A. N. Rawes (Secretary).

An interesting exhibit, the result of an experiment in storing Apples, was submitted to the Committee by Mr. E. Burgess, Horticultural Superintendent of Surrey. It demonstrated the effect of storing Apples, in this instance Cox's Orange Pippin, wrapped in oiled paper, and should be of interest to those who desire to keep small quantities of choice Apples for so long a period as possible. The fruits that had been wrapped in oiled paper were undoubtedly in much better condition than those that had not received such treatment.

Groups.

Messrs. Sutton and Sons staged a magnificent group of vegetables and salads. There were large heads of beautifully preserved Broccoli; Sutton's Prizetaker, Acquisition, Royal Favourite and Improved Musselburgh Leeks; finely-shaped Sutton's Student, Veitch's Improved Hollow-crown and Tender and True Parsnips; and several varieties of Potatos, included amongst which were Edgecote Purple, Red King, Arran Comrade, Arran Chief, Catriona, Sutton's Abundance, Kerr's Pink and Majestic. Onions were well-represented by Sutton's Improved Reading, Sutton's A.1, Selected Ailsa Craig of exceptional shape and size, the Sutton Globe and Perfection; while Beetroots included the long-rooted Sutton's Blood Red, Sutton's Perfection and Sutton's Market Favourite, and the round, Sutton's Globe. There were several varieties of Dwarf French Beans, Kohl Rabi, Celeriac, Celery and various types of Cabbage. The trays of Mustard and Cress, and the bundles of Asparagus were all of exceptional quality, while the more uncommon vegetables and fruits included Cyphomandra betacea, the Tree Tomato, Oxalis crenata, Black Spanish Radish, salad Potatos, Stachys tuberifera, and Garlic.

Messrs. T. Rivers and Son, Ltd., displayed well-fruited specimens of Oranges, Grape Fruits and Lemons. Of Oranges there were St. Michael's Egg Orange, Thomson's Improved Navel, Achilles, Maltese Oval, and Exquisite, all well-coloured and looking extremely inviting; while of Lemons there were Sweet Brazilian, White Lemon and Imperial.

Messrs. George Bunyard and Co. staged dishes of late dessert Apples, sixteen varieties in all. There were Adams's Pearmain, Claygate Pearmain, Ribston Pippin, Sanspariel and Mabbott's Pearmain, all of exceptionally fine quality; while other noteworthy varieties in this group were Blenheim Orange, Christmas Pearmain, Rosemary Russet and Reinette du Canada.

A collection of Potatos was exhibited by Messrs. Dobbie and Co., Ltd.; the tubers were in fine condition and well-graded. Of early varieties there were Climax, Witch Hill, and the purple-tinted Di Vernon; of second earlies, Arran Comrade; and for the maincrop, Arran Consul, Majestic, Field Marshal, Red King, Golden Wonder and Kerr's Pink.

Annual Meeting.

The Annual General Meeting of Fellows, held at 3 p.m. in the Lecture Room, was well attended, and was presided over by Lord Lambourne, the President. After an objection had been raised by Mr. Fife, to the effect that the minutes of the last Annual Meeting did not contain a motion connected with the holding of the Rose Trials at Wisley, the minutes, on the motion of the Chairman, were accepted as read.

Presentations of various medals and other awards were then made by Lord Lambourne.

In proposing the adoption of the Report of the Council for 1927, Lord Lambourne thanked his colleagues for the manner in which the business of the Society had been conducted during his illness. He spoke of the progress that was being made in the construction of the new hall, and expressed the hope that he would see the building opened with fitting ceremony. He drew the attention of the meeting to the large increase in the number of Fellows, and asked for support and co-operation at the forthcoming International Conference in connection with Garden Architecture.

Sir William Lawrence seconded the adoption of the Report, and the motion was supported by Mr. C. T. Musgrave. Sir W. Lawrence referred to the various activities of the Society during the past year, while Mr. C. T. Musgrave gave the meeting a brief report of the progress that had been made with the new hall. He stated that, despite many unforeseen delays, the general structure had been completed, that the exhibition hall itself was practically finished, and that the construction of the front and the offices, etc., was well in hand.

Mr. Fife asked whether the Wisley Committee considered that the Rose Trial had been a success, and Mr. C. G. A. Nix stated, as Chairman of this Committee, that they were perfectly satisfied.

A suggestion to the effect that some method be devised whereby Fellows of the Society might be better able to view the exhibits at Chelsea, received the assurance of the President that the Council were giving the question of "overcrowding" at this show their earnest consideration.

Mr. C. H. Curtis asked that a statement be made as to the actual cost of the new hall upon its completion, and Sir W. Lawrence replied that it would not exceed £170,000. The motion for the adoption of the Report was then carried.

Mr. C. T. Musgrave, after a brief explanation to justify the action of the Council, moved that the meeting was in agreement with the Council, and that the draft of the new Charter, together with the bye-laws, be submitted through the proper channels for His Majesty's approval. This motion was carried unanimously.

Dr. Rodman then expressed the thanks of the meeting to Lord Lambourne for the great interest he displays in all matters connected with the Society. This concluded the proceedings.

GUILDFORD AND DISTRICT GARDENERS.'

A more inclement night could hardly be conceived than that of Thursday, February 2, when Mr. Kirby, of Pirbright, visited Guildford to lecture on Rock Gardens. Yet amongst those present were a few spartans who had come from distances of three, five and even seven miles. They were well repaid by the informative address delivered by Mr. Kirby.

Mr. Kirby proved himself master of his subject, as he dealt in turn with the most suitable sites for different plants. General directions were given for the formation of suitable quarters for many alpines, and then the plants came in for consideration—Aubrietias, with their wonderful array of bright colours; Arabis, Androsaces, Campanulas, the Dianthus family, Anemones, Gentians, Irises, Saxifragas, Primulas and many others were discussed. Mr. Kirby mentioned a great many plants easy to grow in various positions for the beginner, and others more difficult for the experienced gardeners. He said that, in a natural state, alpine snows give protection to plants in winter; unfortunately, it is not possible to import alpine conditions such as obtain on the Matterhorn and the Jungfrau, so many plants have to be coaxed into good behaviour. Many of Mr. Kirby's descriptions of brilliant displays of masses of flowers were from his own personal observations during many visits to the Alps, and his audience realised something of the manifold beauty and variety of alpines. Mr. W. T. Patrick, the President, expressed the thanks of the meeting to the lecturer for the time and care spent upon the preparation of his subject, for his visit, and for the general interest he had always manifested in the work of the Association.

SPALDING AND DISTRICT BULB GROWERS'.

At the annual meeting of the Spalding and District Bulb Growers' Association, when Mr. A. W. White, of Hillegom, Spalding, presided, he was re-elected as President; Mr. B. Baxter was re-appointed Vice-President; and the retiring members of the Committee were re-elected, with the exception of Mr. O. W. D'Alcorn, who was succeeded by Mr. W. Groom.

The Chairman briefly reviewed the work of the Association during the year 1927, and reminded the members of the forced-bloom show to be held on the 25th of this month, at Spalding.

Various matters of importance to the industry were considered, and a lengthy discussion ensued with regard to imported flowers, it being pointed out that large quantities were now being sent into this country without contributing anything to the rates. The matter was left in the hands of the Committee, with a view to some united action being taken in protest.

Obituary.

A. Beckett.—The death of Mr. A. Beckett took place at Sheffield Hospital, following an operation. Mr. Beckett was for the past three years Gardener and Sub-agent to Lt.-Col. H. K. Stephenson, of Hassop Hall, Bakewell, Derbyshire. Born on the estate of the Duke of Westminster, he served his apprenticeship in the famous gardens of Eaton Hall, and after working as journeyman and foreman in various gardens, secured an appointment as gardener to Major Miles J. Stapylton, of Myton Hall, Yorkshire. Later, he was appointed gardener to Sir William Todd, Halnaby Hall, Darlington. Three years later he went to Sedbury Park, Yorkshire, as gardener to G. E. Sisterson, Esq., and left after six years' service to take up his duties of gardener and agent at Hassop Hall. Of a very kind and obliging nature, he was always held in high esteem by his employers and all who came in contact with him. He was forty-two years of age, and leaves a widow and three young children. The interment took place at Alford, Chester, on Thursday, February 9.

William Camp.—At the advanced age of 81 years, Mr. William Camp passed away at Sawbridgeworth on Monday last. Mr. Camp's reminiscences and the story of his long association with the firm of Messrs. T. Rivers and Son, were given in *The Gardeners' Chronicle* of April 3, April 10 and April 17, 1926, and in our issue of March 29 of that year we published an appreciation of his work and personality, accompanied by his portrait.

Arthur W. Paul.—We learn, with very deep regret, of the death of Mr. Arthur William Paul, son of the late Mr. William Paul, and formerly proprietor of the famous Rose and tree nurseries at Waltham Cross. Mr. A. W. Paul retired from business many years ago. He was a scholarly gentleman, very fond of old gardening books, and always gave one the impression that he would have preferred a life devoted to scientific research or botanical interests rather than a purely business career. Naturally reticent, he was not a "hail fellow, well met!" among his brother nurserymen; nevertheless, he was held in the very highest esteem for his integrity and unusually wide knowledge. In business, in nomenclature and in courtesy he was punctilious to a degree, indeed, like his more famous father he was a fine type of the "old English gentleman." For many years he was a member of the Council of the Horticultural Trades' Association, and for one period filled the presidential chair of that body. His death has severed another link in the chain of association with the old type of nurserymen and florists.

ANSWERS TO CORRESPONDENTS.

Alum for the Destruction of Slugs.—*A. H.* Alum may be applied in saturated solution either to water the ground or spray the plants with, without risk of damage. For solutions, lump alum, which is cheaper, may be used instead of the powdered material, and it should be dissolved in a suitable vessel by means of hot water; a saturated solution is approximately one pound of alum to one gallon of water. Alum may also be used in the powdered state for the protection of isolated plants in slug-infested ground. We do not advise you to use Paris green on salads or anything that is likely to be eaten soon after application, as it is a poisonous substance.

Carnation Rust.—*L. O.* Your Carnations are attacked by rust. The plants should be sprayed with potassium sulphide, but, if the disease is very severe, your best plan is to burn the diseased plants and obtain a fresh stock.

Cause and Cure of Gummosis.—*E.* Gummosis of stone fruits is produced by Cladosporium epiphyllum and possibly other species; but they are believed to be wound-parasites. The spores enter the trees by wounds, such as are produced by the breaking of branches, by severe pruning and leaving of the wounds unprotected, or by birds that peck off leaf-buds or flower-buds. The fungus cannot be destroyed when once inside the trunk or branches. The tree will die in time if the fungus enters the trunk. Branches that are affected should be cut away and burned, and the wounds tarred or given two coats of paint. The surface soil round the tree should be removed, fresh soil added, and a layer of quick-lime spread over it, where the gum drops. The fruits of the Victoria Plum are very liable to gummosis, as may be seen by cutting them open before or after boiling; but as the fruits are removed the tree may go on fruiting for many years. Aphides are most likely responsible for letting the fungus into the fruits, and should be kept in check.

Cordyline after Flowering.—*H.* Cordyline australis, planted in a nursery in the Channel Islands many years before we saw it, had formed a tree over twenty feet high, with a trunk four inches or more in diameter. This had flowered and produced good seeds for many years. Other species have fruited in greenhouses in this country and new varieties have been raised from them. Not many of the Palms die after blooming. The Talipot Palm (Corypha umbraculifera) is said to die after flowering. Many of the cultivated Palms in this country have flowered and fruited for many years without dying, but many plants have died as a result of letting them get dry at the roots, and by growing them in too low a temperature.

Gardener's Agreement.—*E. H.* We have consulted many legal works and also an eminent solicitor, but cannot discover any particular form of agreement that would be suitable for a gardener obtaining a new appointment; indeed, we do not think it would be possible to have a general form that would be of any practical use as so much depends upon the particular conditions.

Communications Received.—J. R.—S. M.—W. P. W.—A. McC.—D. H. C.—H. E. D.—H. S.—R. R. M.—J. W. M.—C. B.—J. P.—W. F. E.—G. B.—W. B. L.—W. I.—J. C.—A. P.—R. A.—J. C.—C. M.—W. A.—M. C. R.—A. G.—W. L.—E. E. T.—H. F.—J. B.—T. J. M.—A. D. C.

THE
Gardeners' Chronicle
No. 2148.—*SATURDAY, FEBRUARY* 25, 1928

CONTENTS.

American notes—
  Winter - flowering Annuals 136
Birds and Fruit ... 143
Books, notices of—
  Mycorrhiza ... 141
  Wild Flowers of Kashmir 141
Chrysanthemums, early-flowering ... 134
Currants, ornamental 143
Devil's Dyke, Brighton 131
Edinburgh, notes from 136
Floods and the Law ... 139
Flower garden—
  Bedding Salvias ... 134
Flowers on St. Valentine's Day 136
Fruit Garden—
  Effect of soil on spur pruning 142
"Gardeners' Chronicle" seventy - five years ago 131
Gardeners, legacies to 130
Gladioli 129
Harrison, Mr. A. T. ... 130
Indoor Plants—
  Acokanthera spectabilis 135
  Epacris 135
  Humea elegans ... 134
  Impatiens 135
  Nepenthes 134
Open spaces, grants for 130
Orchid notes and gleanings—
  Mexican Laelias ... 135
Parks and gardens, public 142
Pelargoniums, rooting Zonal 143
Plant Diseases in Scottish gardens ... 143
Plant novelties, registered 142
Plant tonics 143
Plants new or noteworthy—
  Some new Siamese Plants 140
Potato synonyms ... 129
Pralinage 143
Rhododendron Association 131
Rhododendron prospects 137
Rhubarb, forced ... 143
Salisbury's interest in wild flowers ... 131
Societies—
  British Mycological 145
  Cardiff and District Gardeners' ... 144
  Edinburgh and East of Scotland Potato 144
  Glasgow and West of Scotland 144
  Guildford and District Gardeners' ... 144
  Leicester Chrysanthemum 144
  Lincolnshire Gardeners' 146
  Reading and District Gardeners' ... 144
  Royal Gardeners' Orphan Fund ... 145
  Salisbury and District Gardeners' ... 146
  United Horticultural Benefit & Provident 144
Tree nursery conference in Germany ... 130
Trees, damage to, at Kew 130
Trees and shrubs—
  Mitraria coccinea ... 137
Vegetable garden—
  Brussels Sprouts ... 142
  Maize 142
  Tarragon 142
Ward's, Mr. F. Kingdon, ninth expedition in Asia ... 138
Week's work, the ... 132
Wild flowers, protection for, in Germany ... 130
Wisley, notes from ... 136

ILLUSTRATIONS.

Camellia rosaeflora var. fl. pl. 137
Cymbidium Lilian Sander var. aureum 133
Harrison, Mr. A. T., portrait of 130
Leptospermum scoparium var. roseum multipetalum 131
Odontoglossum Thetis 135
Ward's, Mr. F. Kingdon, expedition: views of... 138, 139

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 40·4°.

ACTUAL TEMPERATURE.—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London, Wednesday, February 22, 10 a.m. Bar. 30·6. Temp. 42°. Weather, Slight Fog.

Gladioli.
I.

INTEREST in Gladioli has developed with amazing rapidity during the past few years. A hundred years ago the cultivation of these flowers was in the hands of a very few, and their number did not increase to a marked extent until some twenty years later. Dean Herbert was one of the early hybridisers, and it was he who saw the possibility of improving the flower by crossing different species. In one of his letters the Dean stated, in 1822:—"I am persuaded that the African Gladioli will become great favourites with florists when their beauty in the open border, the facility of their culture, and the endless variety which may be produced from seed by blending the several species are fully known." A year later (1823), at Colville's Nursery, Chelsea, was produced a variety named after the raiser; from this the nanus section was rapidly developed in the Channel Islands and on the Continent, and G. Colvillei alba The Bride is probably the best variety of a section that is chiefly used for forcing by the trade, but is not in much favour among private growers. In 1840 the forerunner of the Gandavensis group appeared, and was purchased by Louis Van Houtte, of Belgium. G. psittacinus was strongly suspected as being the mother parent, and the other parent is hinted at in the following description of the flower by the purchaser of the stock:—"In stateliness and colour it exceeds all others we have seen among Gladioli. Its dimensions surpass ramosus; its majestic flowers, to the number of eighteen or twenty, are of the most charming vermilion; their inferior petals, adorned with chrome, amaranth and brown, are relieved by anthers of azure-blue which descends to the centre of the flower. At the moment I write, all Ghent comes to admire it." From Belgium we turn to France, where M. Souchet, the gardener to Napoleon III, devoted much time to the improvement of the flower. It has been stated that when Queen Victoria visited Fontainebleau in 1855 she found the flower borders decorated in honour of her visit with cut spikes of Gladioli, placed in vases of water among the common border plants. Be that as it may, in the November number of the *Florist* for 1860, there is a plate of two varieties raised by Mr. Standish, of Bagshot, and in the letterpress we read (p. 321): "Strange as it may appear, these hybrids are superior to the French kinds; they are of finer shape, brighter colour, and far more hardy. The frost which we had in the first week of October has cut up our French friends in such a manner that they hang and droop beyond all hope of recovery, while 'the Britishers' are coming out with a force only known to a true-born Briton. At the present time, October 25, many hundreds of Bagshot Gladioli are to be seen in full flower at the Royal Nursery." The note ends with a description of a dozen varieties. In the following year (1861) the same journal figured a variety under the name of Mrs. Reynolds Hole. After a description of the flower, the writer proceeds "to invite attention to some of the structural peculiarities of the race of hybrid Gladioli which is now bidding high for popular favour, with the view of directing into a proper channel the current which is setting strongly in the direction of raising new varieties." He divides the flowers into two groups; one the *erect-flowered*, and the other the *reverse-flowered*, and then goes on to describe the latter as follows:—"The petaline divisions are so placed so as to have one large upper and two smaller basal segments, so that in these varieties the lip-like portion consists of two petaline lobes instead of one. The upper or back segment of the flower, which in the erect-flowered group answers to a sepal, corresponds with a petal in this reverse-flowered group, to which some of the very finest varieties known, including the subject of our illustration, belong." Eight varieties in the first group and nine in the second group are described "from some finely-bloomed plants in the collections of Mr. W. Barnes, of Camberwell, and Messrs. E. G. Henderson and Son, of St. John's Wood. Although the development of the flower may be said to have followed more generally the second group, it will be found that some varieties show both forms on the same spike." Mr. James Kelway told us, in a paper read before the R.H.S., in September, 1890, that he had been growing Gladioli for sixty years, but it was not until 1857, when he obtained all the best of M. Souchet's varieties, that he saved any great quantity of seeds. It was not, however, with a hybrid that Mr. James Kelway started his long list of awards for Gladioli, but with a species named G. formosus, found in Cape Colony in 1863 by Klatt, and flowered by Mr. Kelway in 1868. About 1870, Mr. William Bull introduced from Natal G. purpureo-auratus. A few years later M. Victor Lemoine of Nancy used this species in conjunction with some of the best Gandavensis varieties, and this cross resulted in the foundation of the Lemoine section. Looking through the list of Gladioli certificated by the R.H.S. from 1859 to 1910, we find that, starting in 1890, Mr. Kelway is credited with sixty-eight varieties, and Mr. Burrell, commencing in 1893, with fifteen varieties. Other names are in the list; the next in order is credited with twelve, but he does not appear to have been the raiser. About twenty years ago, Lemoine raised some seedlings from a G. dracocephalus cross, the varieties Fragonard, Quasimodo, and Tyrian being, perhaps, the most pleasing of the nine varieties he put on the market. These, however, are no longer listed by him, and we are sorry for this, as, although they are not large-flowered, they have very rich colouring and pretty markings. The introduction of G. primulinus, both into Europe and America, created fresh interest in the Gladiolus, and crosses made resulted in the raising of Alice Tiplady in 1915, and Golden Girl in 1916, while many varieties were raised by Krelage, Pfitzer and others. So far, these observations have been confined to Europe, but we must not overlook the fact that American growers have also been active. Messrs. Hallock, of New York, purchased from Max Leichtlin a stock of hybrids which were at first known under the name of the raiser, but John Lewis Childs, of New York, purchased the stock from Messrs. Hallock, and put the varieties on the market, about 1893, under the name of G. Childsii. Their introduction produced an immediate effect in that country, and the raising of new seedlings became widespread. Burbank and Groff may also be mentioned as raisers. Those raised by Burbank were not of good constitution, and he ceased for a time to take interest in the flower, but eventually resumed his work, and his later seedlings are only now becoming known on this side of the Atlantic. Groff became well-known by his Peace (1899), La Luna (1904), Dawn (1913), and War (1914). Kunderd, of Indiana, had also been busy raising seedlings, and his first printed price list included only two dozen varieties, priced from 15c. to 50c. His catalogue for 1915 was more ambitious, and consisted of sixteen pages with a cover on which is an illustration of Kunderdi Glory, the first of the ruffled varieties. Kunderd has been as prolific in the introduction of new varieties in America as Kelway in England. Perhaps more so, judging by his 1927 catalogue, in which he describes no fewer than twenty-six new ruffled, seventy-two new plain-petalled, and fifteen new primulinus varieties — all for three-hundred-and-forty dollars! In addition, he has two new laciniated varieties, and a new Snapdragon type. It may be remembered that Mr. Kunderd introduced Laciniatus in 1923, at one thousand dollars a bulb!

Potato Synonyms.—In continuation of its excellent work in connection with the names and synonyms of Potatos, the National Institute of Agricultural Botany has made an examination of the Potato sections of a representative selection of the Seedsmen's Catalogues and Lists for 1928. Stocks of Potatos under many of the names which appear in these publications have been grown by the National Institute of Agricultural Botany at the Potato Testing Station at Ormskirk in recent years, and have been adjudged by the Institute's Synonym Committee to be "synonymous" with well-known established varieties. It is too early to determine whether in 1928 the varieties named below are again synonymous with the type varieties set against them or with some other established variety, or whether they are, in fact, distinct, but prospective purchasers are advised to satisfy themselves by enquiry or guarantee that such varieties are distinct from, or of greater value than, their presumed types. The synonyms are placed in brackets.—Abundance (Bloomfield, Culdees Castle and New Renown); Ally (Goldfinder); Arran Chief (Success); Beauty of Hebron (My Own); Bishop (Advancer); British Queen (Beauty of Essex, Colleen, Irish Elegance, Royalty and White Stone); Coronation (Crown Jewel); Crusader (Titan); Duke of York (Cherub, Chester Early, Midlothian Early, St. Paul, Victory and Western Hero); Great Scot (Dreadnought, King John, Lord of the Isles, and Southampton Wonder); Immune Ashleaf (Improved Ashleaf); King George (Southern Champion); Red King Edward (Cleasdon Park); Royal Kidney (Guardian, King of Potatoes, Queen Mary); Sharpe's Express (Alpha, Earliest of All, Early Bird, Early Favourite and Express); Sharpe's Victor (First Crop and Victor); Sir John Llewelyn (Colonist, Earliest of All, Eclipse and Nun Nicer); Snowdrop (First Crop); Stirling Castle (Mighty Atom); Up-to-Date (Dalhousie, Dalmeny Hero, Duchess of Cornwall, Factor, Irish King, Longkeeper, Prosperity, Scottish Triumph, Sensation and Tremendous).

Damage to Trees at Kew by the Recent Gale.—Kew must have felt the full force of the gale which raged over the British Isles on February 10 and 11. Two of the large Elms on the banks of the pond, near the Victoria Gate, were blown down during the night. Several decayed roots under the centre of one tree suggests that this was the first to move and carried the other with it in its fall. Not far from the Pagoda and Japanese Gateway one of the tallest Scots Pines was broken off about ten feet from the ground. Along the Princess's Walk a fine specimen of the Common Birch, sixty-five feet in height, was uprooted. Perhaps the most important loss is that of Salix Medemii in the Queen's Cottage grounds. Although only a small tree, it is the original specimen introduced to Kew from the Continent in 1879, and the parent of several specimens in the grounds, all of which are laden with their large yellow catkins. The old tree was in the area of several acres of the Queen's Cottage Grounds that was inundated with a foot or more of water when the Thames overflowed its banks during the January floods. This left the ground very soft, with the result that a number of the Willows, including S. Medemii, were blown over during the high winds. It was deemed advisable to remove one of the three tall Lombardy Poplars at the back of Museum No. 1, bordering the Kew Road. The roots showed signs of weakening, and the tree had a tendency to lean in the direction of the main road, therefore its position necessitated its removal in pieces, each branch being secured with ropes before being cut off and lowered to the ground.

Legacies to Gardeners.—The late Mrs. G. W. Sykes, of Barnborough House, Exeter, who died December 30 last, bequeathed £100 to her gardener, Mr. Sears.—The late Mrs. M. K. Livingstone-Learmouth, of Cadlington, Horndean, who died on December 23, bequeathed £150 to her gardener, Mr. W. Covell, if still in her service.—The late Mr. J. Booth, of Hazelhurst, Turton, near Bolton, who died on December 19, left an annuity of £52 to his gardener, Mr. A. Smith Redman.—The late Mrs. M. J. Bradley, of Lyndhurst, Harewood, Yorkshire, who died on November 29 last, left £100 to her gardener, Mr. A. Sewell.—A similar sum of money was also bequeathed by the late Miss K. E. Bunce, of Edgbaston, Birmingham, to her gardener, Mr. S. Walters.

Protection for Wild Flowers in Germany.—The Baden Minister of Education, etc., has placed under legal protection the following wild plants, which are becoming more and more rare, and are in danger of extinction:—Osmunda regalis, Stipa pennata, Lilium Martagon, Scilla bifolia, Galanthus nivalis, Leucojum vernum, Gladiolus palustris, Cypripedium Calceolus, and all kinds of Orchids, Aconitum Lycoctonum and A. Napellus, Anemone pulsatilla, A. narcissiflora and A. sylvestis, Trollius europaeus, Aquilegia vulgaris, Nymphaea alba, Nuphar luteum, N. pumilum (minimum), Dictamnus albus, Saxifraga Aizoon, S. oppositifolia, Daphne Mezereum, Oenothera, Trapa natans, Vinca, Hedera, Pyrola, all Ericas, Andromeda Polifolia, Primula Auricula, P. farinosa, all species of Gentiana, Soldanella alpina, Swertia perennis, Physalis Alkekengi, Symphytum, Digitalis, Carlina acaulis, Aster Amellus, A. Linosyris and Centaurea montana.

Mr. A. T. Harrison.—The numerous friends of Mr. A. T. Harrison will be pleased to learn of his appointment as Gardener at the Training Centre, Jordanhill, Glasgow. Mr. Harrison's wide experience particularly fits him for his new post; as readers are no doubt aware, he has had charge of the famous gardens at Culzean Castle, Ayrshire, a position he has held for nearly nine years. During this time he has succeeded in maintaining the prestige of the Culzean gardens, although difficulties have arisen, such as have been common to most large establishments since the war. As a youth, Mr. Harrison was selected for the teaching profession, but the confined life did not suit him, so he was apprenticed in the gardens of Fordell House, Fifeshire, under the late Mr. George Ramsay. After four years there he went to Edinburgh and was for a time in the propagating department at Comeley Bank Nurseries. Mr. Harrison gained further experience at Duart Gardens, Isle of Mull; Kilbowie, Oban; and later, at Fullarton House, Troon. From there he went to Broxmouth Park, Dunbar, then to Thirlestane Castle, Berwickshire, and Harryburn House, Lauder. Before going to Culzean, Mr. Harrison had charge of the gardens at Eynsham Hall, Witney, Oxfordshire, and also those of Freeland House, both of these estates belonging to J. F. Mason, Esq. While in Oxfordshire he was connected with the Food Production Department of that county. Mr. Harrison's interest in and love for the Perpetual-flowering Carnation was first aroused when he occupied the post of gardener at Kilkerran, Ayrshire. As a writer on horticultural subjects, Mr. Harrison is well-known to our readers, as his notes "For Northern Gardeners" appear week by week in this *Journal*.

MR. A. T. HARRISON.

The Imperial Forestry Institute.—This Institute, which is connected with the University of Oxford, has recently issued its *Third Annual Report* 1926-7, *and Prospectus*. The Report contains much useful information on the research work that has been conducted under the auspices of this Institute. The new experimental garden, situated at Kennington, on the outskirts of Oxford, and run in conjunction with the Forestry Commission, has proved of great value. At this station courses of instruction are given in methods of controlled experimental work. Two Forest Officers from Nigeria have recently completed their course here, and were enabled, through arrangements made with the Inspector-General of Forests, India, to visit India and Burma to study methods of silviculture practised in those countries. Research work in connection with the root-action of seedling Pines, and a special study of Pinus Pinaster and its geographical variations, are being conducted, while courses, both theoretical and practical, have been given on Forest Management. Special continental tours were arranged in the Easter and summer vacations. One party visited Germany and Austria and another toured France and Switzerland. Throughout these tours the staff and students were received with great cordiality. The herbarium of the Institute has been enlarged by the addition of 7,450 specimens, while in connection with this department an interesting pamphlet dealing with the collection and preparation of herbarium and timber specimens, has been published recently. Investigations of various pests, and special investigations into the biology of the Sirex Wood Wasps and their parasites, have been conducted by the entomological section; the New Zealand Government hope to establish the parasites in the plantations of Pinus insignis that are being attacked by Sirex cyaneus, which has been imported into that country from Europe. The investigations of this department also include the bionomics of Pine Tortrix moths, Cockchafers in forest nurseries, the Pine Saw-fly in East Anglia, and the Pine Weevil. Other work has been done by the various departments of the Institute in connection with the association of the fungus Armillaria mellia with the "die-back" of Conifers and Oaks; and with regard to the financial returns from the cultivation of Scots and Corsican Pines.

New Open Space for Berlin.—A new and extensive open space has been secured for the public in Berlin, on the former site of the Luisenstädtischen Canal. Professor Barth, the Director of the Berlin Parks and Gardens, is intending to lay out the site as a kind of public botanic garden, where rare plants and flowers will be grown. A novel feature will be an artistic pool, which will be warmed by the introduction of the warm outflow from a factory, and will be used for the cultivation of Nymphaeas.

Grants for Open Spaces.—The Metropolitan Public Gardens Association has granted £80 towards the cost of acquiring Selsdon Wood, a bird sanctuary of Surrey, with an area of one-hundred-and-sixty-five acres; £50 towards the cost of purchasing the remainder of Petts Wood, Chislehurst, as a memorial to William Willett, the originator of Summer-time; and, under certain conditions, £150 towards the expense of laying out St. John's Churchyard Garden, Walham Green.

New Sarracenia House at Kew.—Old Kewites, and others of our readers familiar with the conditions under which Sarracenias and various other insectivorous plants have been grown for some years in the porch attached to the Victoria regia House, will be interested to know that this porch has been removed recently. A new house is now in course of erection on the same site, and the adjoining ground on both sides. It is a lean-to structure, fifty-four feet in length and nine feet wide, running the full length of the Victoria Regia House.

Tree Nursery Conference in Germany.—There are so many growers of trees in Germany that they have an association of their own, the Union of German Tree Nurserymen. This year the Winter Conference was held at Goslar, and part of the business done was the fixing of prices for the produce to be sold in the spring. Discussion also took place regarding the difficulties created by the multiplication of varieties in fruit trees, and an endeavour was made to bring pomologically scientific order out of the chaos which exists owing to the great number of local names under which fruit trees are asked for in Germany. To some extent this problem exists in England, but naturally the larger a country, and the more remote the various parts from each other, the more local names are used instead of those known to scientific pomologists.

Devil's Dyke, Brighton.—The future of this well-known Sussex beauty spot as a pleasure resort for the public is now practically assured, for the Brighton Town Council, by an unanimous vote, has decided to purchase it. Some few weeks ago it was secured by Alderman H. Carden with a view to offering it to the Brighton Council at the price he paid for it, which is stated to be £9,000. The confirmation of the purchase at next week's meeting is practically assured. The area included in the purchase consists of 190 acres, and embraces the Dyke itself, together with the hotel and the slopes leading down to the weald. We understand that one of the conditions of the purchase is that the public shall have unrestricted access to the Dyke, with the exception of a small portion that may be appropriated for the construction of an hotel. During recent years the Devil's Dyke has experienced many changes. It was at one time a place of amusement, with aerial railways, roundabouts, etc.; during the War it was used as a bomb-testing station, and the "Poor Man's Wall," a famous prehistoric earthwork, was damaged; and, later, the development of a bungalow settlement was mooted, but failed to materialise. It will, therefore, be a source of gratification to all who are interested in scenic beauty to learn of the Brighton Council's action.

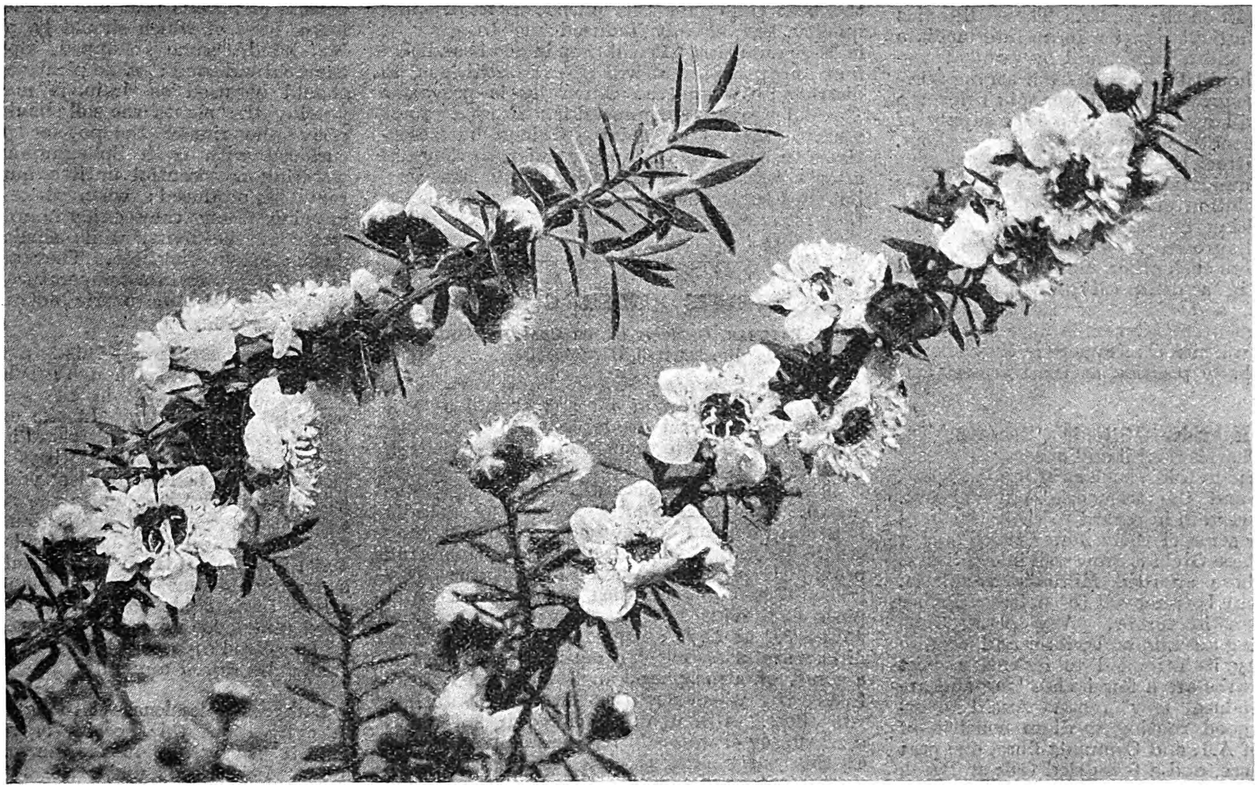

FIG. 67.—LEPTOSPERMUM SCOPARIUM VAR. ROSEUM MULTIPETALUM.

R.H.S. Award of Merit, February 14. Flowers lilac-pink. Shown by Rev. A. T. Boscawen and Messrs. R. Veitch and Son. (See p. 126).

Rhododendron Association.—At the Council meeting of the Rhododendron Association, held on Tuesday, February 14, thirty-six new members were elected, bringing the total number up to 137. Through the kindness of the Royal Horticultural Society, a leaflet was inserted in the R.H.S. *Journal*, but so far this has only brought two applications for membership. Hope was expressed that many would join before the show on May 1, on which day the Annual General Meeting of the Association will be held at the R.H.S. Hall. It was decided to issue an Annual Year Book, the first number to be published in 1929.

Tasting Day at Long Ashton Research Station, Bristol.—Arrangements are being made for a demonstration of tractors and implements suitable for use in commercial fruit plantations and market gardens at the Long Ashton Research Station, Bristol, on May 3—Tasting Day. Firms wishing to demonstrate are requested to communicate with the Pomologist at Long Ashton at an early date.

Salisbury's Interest in Wild Flower Scheme.—Following the lecture given before the Salisbury Gardeners' Society by Miss Barbara Gullick, B.Sc., the Secretary reports that a scheme suggested last November has been accepted by the Salisbury City Council. This suggestion was that the City would be benefited by having a permanent exhibit of living wild flowers in the Public Library during the summer months, and that the Gardeners' Society should provide and maintain thirty vases of local wild flowers, labelled with English and botanical names, with notes. A feature of the scheme is that anyone is invited to bring flowers to be named, also flowers for exhibition, on Tuesday evenings. It is hoped, with this wider range, that Salisbury's exhibits will attain wider popularity. The City Council expressed gratitude for the suggestion, and, in connection with the scheme, have arranged lectures on wild flowers for the school children, while the local press has agreed to print a short article dealing with these wild flowers each week, beginning at Easter.

Gardeners' Royal Benevolent Institution.—The Rt. Hon. The Viscount Lascelles, K.G., D.S.O., will preside at the eighty-third Anniversary Festival Dinner in aid of the funds of the Gardeners' Royal Benevolent Institution, at the Savoy Hotel, on Thursday, June 28.

Plant Hunting in Crete.—Following the Horticultural Club dinner, on Tuesday, February 28, at the St. Ermin's Hotel, Caxton Street, Westminster, at 6.30 p.m. for 7 p.m., Mr. G. P. Baker will give a lecture entitled "Plant Hunting in Crete," illustrated by lantern slides. An illustrated account of Mr. Baker's re-discovery of Ramondia (Jankaea) Heldreichii appeared in *The Gardeners' Chronicle* of January 21.

Appointments for the Ensuing Week.—Tuesday, February 28: Royal Horticultural Society's Committees meet; Royal West Renfrewshire Horticultural Society's Council meeting. Thursday, March 1: London Gardens Guild Lecture; Linnean Society's meeting. Friday, March 2: Orchid Club meeting; Dundee Horticultural Society's lecture; Bridport Chrysanthemum Society's meeting; Accrington Chrysanthemum Society's meeting. Saturday, March 3: Blackburn Horticultural Society's meeting and lecture.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Early Potatos.*—As I am going to make up a bed for a few early Potatos, perhaps it may be interesting to some to learn how I get a very early crop without the aid of glass. I take a few cart-loads of half-rotten horse-dung and make a bed two-and-a-half feet deep. After treading it down a little I spread about two inches of soil over it, then place the sets in rows six inches apart and six inches from set to set, covering the whole with about three inches of fine soil. When frosty, the bed is easily protected with mats, and so soon as spring frosts have disappeared I transplant, lifting each set separately with a dung-fork, pushing the latter down between the sets until I get hold of two or three inches of the dung, which generally lifts the set with as much of the soil about the shoot as protects it from injury in the removal. I imagine that the transplanting checks the rapid growth of the stem and luxuriance of leaves and that it hastens the formation and growth of the tubers.—*J. C., Gard. Chron., February* 19, 1853.

Publications Received.—*Die Kulturpraxis der Alpenpflanzen*, by Erich Wocke; Paul Parey, Hedemannstrasse 28, Berlin, S.W.11; price Rm. 19.—*Gardening Without Worry*, by George Barlow; Seeley, Service and Co., Ltd., 196, Shaftesbury Avenue, London; price 3/6 net.

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN MOORE, Manchester.

Odontoglossum citrosmum.—This sweetly-scented Mexican species should be grown suspended in a light position in the intermediate house. Although the bulbs may shrivel, water should not be given in quantity until the flower-spike is pushing through the young growth, when ample watering will help the formation of the spike, and will also assist the bulbs to regain their normal condition.

Miltonia vexillaria.—There are numerous varieties of this popular Orchid which make a fine display of flowers during spring and early summer, and although the flowers are not satisfactory when cut, they remain in perfection for many weeks on the plants. These Miltonias grow well in a light position in an intermediate temperature, and a humid and buoyant atmosphere, and should be shaded from strong sunshine. As the growths and flower spikes develop the plants will require an increased supply of water at the roots, but avoid saturating them. Thrips often attack these Orchids but may be kept in check by fumigating, or by dipping the plants in a weak solution of an approved insecticide, afterwards tilting the plants to allow the moisture to run from the growths. Occasionally the young leaves adhere to each other, and if not separated will result in a deformed growth. Miltonia Phalaenopsis and Miltonia Roezlii require similar treatment to M. vexillaria, except that they need a warmer atmosphere; they should be given a shady position at the warmest end of the house.

Miltonia Hybrids.—Miltonia Bleuana, M. Hyeana, M. Charlesworthii and others, also some of the bigeneric hybrids, such as Miltoniodas and Odontonias, and the trigeneric Vuylstekeara, are rather uncertain in regard to their season of flowering, for some of them flower twice during the year. These Orchids grow well in conditions similar to those afforded Miltonia vexillaria, and, like it, may be removed to cooler and drier quarters when in flower. Any plants that flowered during autumn and winter and require repotting, may be attended to in this respect when the growths are a few inches long and are about to produce new roots. Avoid over-potting. A good rooting medium consists of equal parts of A.1. and Osmunda-fibre, one part Sphagnum-moss, and a few dried Oak or Beech leaves, broken up roughly and well mixed. Discretion as to watering should be used, as previously advised for newly-potted Orchids.

THE KITCHEN GARDEN.

By ALLAN FALCONER, Gardener to the CHEADLE ROYAL MENTAL HOSPITAL, Cheadle, Cheshire.

Trenches for Runner Beans.—Unless the ground is trenched throughout, a trench may be opened, two feet six inches wide and two spits deep. Put plenty of good, well-decayed cow manure into it, dig the bottom, and half-fill it with soil; then leave it to the elements. Complete the filling of the trench later, when the soil is dry. This method of preparing the trenches might also be adopted for Peas, but complete trenching, or double-digging is best; where exhibition vegetables have to be produced, deep cultivation is an important factor.

Capsicums, Chilis and Aubergines.—If these are required for culinary purposes, seeds may be sown now in a temperature of 65°. Immediately the seedlings are large enough, pot them singly into sixty-sized pots, and later into five-inch pots; this size will be large enough for the Capsicums. Grow them in light, fibrous loam and Mushroom-bed manure, with sand and bone-meal added. Grow them steadily in a warm house, and when well established expose the plants to sunshine in a cool house or frame. Aubergines will require a further move into six- or seven-inch pots, while the soil should be lighter that that advised for Caspicums. Remove the growing points when the Aubergines are about six inches in height, keep them well-syringed to protect them from red spider, and do not allow more than four fruits to ripen on each plant. Such plants are very decorative so well as being useful for culinary purposes.

Autumn-sown Onions.—If weather conditions are suitable in February, it is an advantage to transplant these towards the end of the month, rather than during March. After repeated trials, I find that the earlier they are planted, under suitable conditions, the heavier will be the crop. Put them in firmly, in suitably enriched land which has been deeply cultivated, twelve inches apart, with fifteen inches between the rows, taking care not to bury the bulbs too deeply. When the weather becomes dry, mulch the beds with well-decayed manure, and keep them well watered. Autumn Triumph is, in my opinion, the best Onion for this purpose; its keeping quality has already induced me to grow it in large numbers. It will keep in good condition for a long period, and will ripen in cold, sunless districts; where the Onion fly is prevalent I would strongly recommend it. Frost does not seem to affect early planted Onions, but sometimes those planted in spring suffer, as they did after a severe frost in early May of last year, but although they received a severe check, they recovered quickly.

FRUITS UNDER GLASS.

By T. PATEMAN, Gardener to SIR CHARLES NALL-CAIN, Brocket Hall, Hertfordshire.

Melons.—Seeds of Melons that were sown during the early part of January should by this date have produced good plants in good condition for planting in prepared borders. Although the weather has been dark and almost sunless it is surprising how sturdily the plants have grown. To cultivate early Melons successfully much will depend on the house in which they are to be grown. In the first place, it should provide the maximum amount of light; secondly it should be equipped with sufficient hot-water pipes to provide a temperature ranging from 65° to 70° at night; while other essential conditions are a strong bottom-heat, a moderate amount of atmospheric moisture, and a little fresh air whenever the outside conditions will allow. Although Melons require an abundant supply of water during the summer months, at this early season care is needed when applying it to the roots. The soil for Melons should consist of a rather heavy loam, lightened somewhat by the addition of old lime-rubble and charcoal. It should be made moderately firm, and arranged in small mounds so as to raise the plants a little above the border. This will prevent water from lodging against the stems of the plants and so will eliminate the possibility of trouble from canker. To obtain an early crop, Melons are best grown as cordons; this is a very simple method. All the lateral growths should be removed until the first wire is reached, and then the others should be pinched at the first leaf until the fruits appear in quantity. Two fruits on each plant will be quite sufficient, as over-cropping of early plants is likely to prove disastrous. Attend to the pollenating of the flowers as they appear, endeavouring to set the number of fruits required at one time, so that they may have equal chances of growth. As the fruits develop small nets should be placed under each to prevent them from breaking the stems on which they are growing.

The Late Vinery.—This house may be put in order without delay, in readiness for starting the vines that are to produce a late supply of fruit. When the work of cleansing the house and vines, and replenishing the borders, has been accomplished, the vinery may be kept closed until the buds are about to burst, when a little fire-heat may be found necessary, although it must not be overdone or the growths will be weak. A night temperature of 50° will be sufficient, with a rise of 10° during the day; beyond this any rise should be caused by sun heat.

Pot Vines.—One-year-old plants that have been cut back to two buds and have been kept in a cool place, may now be started into growth. If necessary, they may be repotted, using good turfy loam, lime rubble and bone-meal as the base of the compost, with a little vine manure if the loam be is a poor quality.

PLANTS UNDER GLASS.

By J. COUTTS, Assistant Curator, Royal Gardens, Kew.

Alocasias and Anthuriums.—As these plants show signs of starting into growth they may be overhauled, top-dressing such as are in good condition at the roots. Anthuriums may remain for several seasons without repotting, but Alocasias, as a rule, are best repotted every year; in any case, it is wise to repot all doubtfully healthy plants. The compost should consist of fibrous peat and a small quantity of loam, both of which should be pulled to pieces by hand, some chopped Sphagnum-moss, charcoal and sand; while plenty of clean crocks, should be used as drainage material. When potting the plants the soil should be mounded above the rim of the pot or pan, and then surfaced with fresh Sphagnum-moss. Careful watering is essential until a quantity of new roots is produced; when these subjects are growing freely they enjoy ample supplies of water at the roots, while shade is necessary during bright sunshine. They are most satisfactory if grown in a temperature of 65° to 70°, with plenty of atmospheric moisture during the growing season.

Lathyrus pubescens.—This is a very beautiful greenhouse species, although it is hardy if grown against a warm wall in the south and west parts of this country. In the colder parts of the country it may be cultivated in a cool greenhouse, and produces the best results when planted in a bed or border, with its growths trained up a wall or under the roof-glass. Its deliciously scented, lavender-blue flowers are freely produced over a considerable period, and I have found them very useful for providing a supply of cut flowers. Plants are easily raised from seeds sown now, and will make good plants for flowering next year; it is not a long-lived plant, therefore a few plants should be raised annually.

Lathyrus splendens.—Although not common in cultivation, this species is very beautiful, but it is by no means an easy plant to grow. It succeeds under the same conditions as L. pubescens, and may be raised from seeds sown at the same time. I have observed that seedlings vary somewhat in colour; good varieties may, however, be propagated by means of cuttings. This species has handsome crimson flowers that are produced very freely when the plant is doing well.

HARDY FRUIT GARDEN.

By T. E. TOMALIN, Gardener to the EARL OF BESSBOROUGH, Stansted Park, Emsworth, Sussex.

Strawberries.—The successful cultivation of this crop in many districts seems to become more difficult each year. Where only a few years ago Strawberry beds could be relied on to furnish profitable crops for at least three years, now they have, in many cases, to be replanted annually. It is, therefore, most important to leave nothing undone that may help to ensure success. The end of July or early August is the best time to plant them, but the ground should be thoroughly prepared now, and manured for a crop of early Potatos, which will be lifted in July, and will leave the ground in excellent condition for the Strawberry plants. If spring planting is practised, on ground that was prepared during the previous autumn, it may be done so soon as the soil is dry enough to walk upon. Plant them firmly, one foot apart, in rows two feet apart; every alternate one should be removed after the first season's crop has been picked. Spring-planted Strawberries should not be allowed to bear fruit during the first season; all flower trusses should be removed as they appear, in order to build up strong crowns for fruiting the following season. One important factor in the successful cultivation of Strawberries is the production of early and vigorous young plants from runners for the late summer planting. To secure these, a border of plants may be reserved; the flower trusses should be removed as they appear, and every encouragement afforded them to ensure the production of strong and healthy runners. Plantations that were made last autumn should be examined when the soil is sufficiently dry to walk upon, and any plants that were loosened by frosts may be made quite firm again, while any losses should be made good if possible.

Covers for Trees in Flower.—The time is fast approaching when these will be required; the material available should be examined and any deficiency may be made good without delay.

THE FLOWER GARDEN.

By J. G. Weston, Gardener to the Duke of Devonshire, Chatsworth, Bakewell, Derbyshire.

Sweet Peas.—Although in the warmer parts of the country and in suitable soils Sweet Peas may be sown out-of-doors in the autumn, in general practice it is found advisable to rely on sowing the seeds in pots or boxes, growing the plants during the winter in cold frames, and planting them out so early as the soil and weather conditions will allow. Under these conditions they may be better protected against the ravages of slugs, mice and birds. Sweet Peas that have received this treatment need abundance of fresh air; on mild days the frame-lights may be entirely removed, the object being to produce thoroughly hardy and vigorous plants. If not previously done the points of the shoots should be removed; the resulting new growths will be in a fine, sturdy condition when planting time arrives. If spring sowing of Sweet Pea seeds is preferred, no time must be lost. Place them, when sown, in moderate warmth to germinate them quickly; when germination has taken place remove them to cooler conditions, for they should never be allowed to remain in a warm and close atmosphere. If they become drawn when young they seldom make successful plants. Where space under glass can be spared, the newer, and therefore the most expensive varieties, should always be sown in pots; they may be better protected than when sown outside so early in the season. The less expensive varieties, to be grown in mixed rows, may be sown outside in March and April with less fear of harm overtaking them. No matter what the method of raising Sweet Peas, the ground in which they are to grow should have been deeply trenched and suitably manured in the autumn; soil preparation is of the first importance. Early preparation in the autumn allows the soil to consolidate before planting time; loose soil is fatal to success.

Standard-trained Plants for Bedding.—At the present time there is a great demand for standard and pyramidal shaped plants for bedding purposes. In many instances these plants are lifted each autumn and potted for use during the following season, but it is not difficult to raise a stock of these soft-wooded plants if sufficient glasshouse space is available. Heliotropes are general favourites, and beds filled with dwarf plants, interspersed with a few standards, are usually greatly admired. Some of the strong-growing Pelargoniums are well adapted to this style of training; Clorinda, Paul Crampel and the various scented-leaved varieties are all suitable. Fuchsias, Aloysia citriodora, Marguerites, Plumbago and Salvia splendens varieties are examples of plants that lend themselves particularly well to this method of culture. Old plants that have been wintered in a cool house now require attention. All dead and weak growth should be pruned back to firm wood; the soil may be given a rich top-dressing, and the plants may be placed in an intermediate temperature to start them into active growth. It is a mistake to grow these plants in a very warm house, for when grown under such conditions they are usually too soft to withstand the ordinary climatic conditions when planted out. Young plants that were raised last season and have been kept growing in moderate warmth all the winter may be potted in a moderately rich compost. Pot them firmly and remove all side-growths as they appear. Tie the main stem to a light Bamboo cane; when it has attained the desired height it should be stopped, and the resulting lateral shoots shortened continually to encourage the formation of bushy heads.

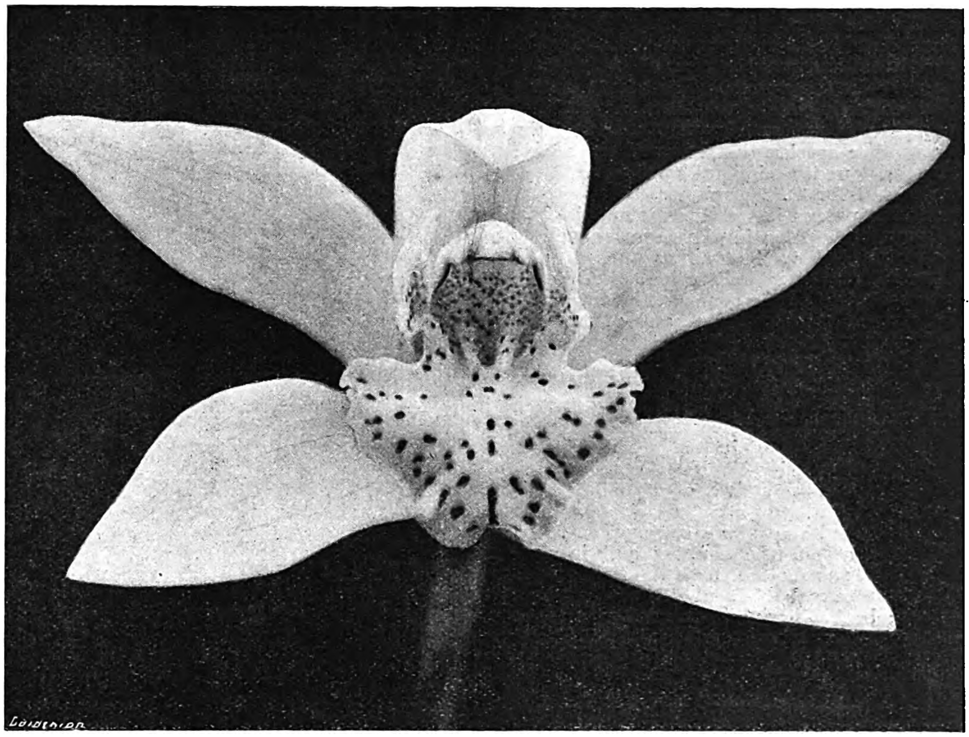

FIG. 68.—CYMBIDIUM LILIAN SANDER VAR. AUREUM.

R.H.S. Award of Merit, February 14. Flowers greenish-yellow. Shown by Messrs. Sander (see p. 126).

FOR NORTHERN GARDENERS.

By A. T. Harrison, Gardener to the Marquis of Ailsa, Culzean Castle, Maybole, Ayrshire.

Jerusalem Artichokes.—These may now be planted if conditions are favourable, by the old-fashioned method known as "dig and plant"—the tubers are planted in the trenches made as the ground is dug. By this method there is no treading on the newly-moved soil, and the results are quite satisfactory. Those who happen to have a row or two of Jerusalem Artichokes still undug, and do not actually require them this season, should try the plan of leaving them alone for another year. If the soil between them is cultivated the resultant crop next season will be a revelation to those who have hitherto planted annually.

Sowing Peas and Beans.—So soon as the ground is in a suitable condition, the first outside sowing of seeds of an early variety of Pea should be made in well-prepared soil. When the site has been marked the surface should be lightly stirred on the first dry and sunny forenoon, and if the weather seems favourable, left to dry for a few hours, when it will be found to be in good working order. The drills, about two inches deep, may be made either with a draw hoe, or with a spade. To avoid treading on the surrounding soil light boards may be laid along both sides of the rows. If a quantity of old potting soil is available in a dry state, this may be usefully employed to cover the seeds; the soil from the drills may then be placed on top of it and made comparatively firm by pressing with a rake or other implement. Broad Bean seeds should also be sown at the first opportunity, observing the same precautions as to working on the soil when in an unsuitable condition. Spinach for early supplies, to follow the autumn-sown variety, may also be sown according to requirements.

Shallots.—In these days of giant Onions this useful vegetable is not so widely grown as formerly, but where its long-keeping qualities are appreciated it may be kept in a perfectly sound state, if properly harvested, long after the large Onions are finished. The young green leaves are of value during the early part of the year for various culinary purposes, and, as they naturally ripen while the sun is still powerful, there is a better chance of thoroughly ripening them to ensure long keeping. Shallots should be planted early; do not simply press the bulbs into the soil, but make a small hole for each with a trowel and partly cover them; it will be found that they will then remain where placed.

The Rock Garden.—The milder weather is affecting early-flowering plants, and several are now beginning to show signs of new growth, and a promise of early bloom. A general cleaning and freshening of their surroundings, with the removal of withered foliage and accumulations of leaves, which are sometimes left for protective purposes, should now be accomplished. It is always interesting to watch the race for first honours among these precocious plants, and although probably not so exciting as some other forms of racing, there is always keen competition as to whether Saxifraga apiculata or S. oppositifolia will be first in making their annual display. Primula denticulata is also showing colour once more; while the Winter Aconites and Snowdrops are already on the wane. Iris unguicularis has been very disappointing this season, probably owing to the wet autumn of last year.

FLOWER GARDEN.

BEDDING SALVIAS.

Salvias are now extensively used for bedding; they may be propagated by cuttings or raised from seeds. If the latter method is preferred the seeds should be sown at once and placed in heat to ensure quick germination. Of the several forms of S. splendens, Pride of Zurich and Scarlet Queen are old favourites; the newer Harbinger is considered by many to be an improvement on these varieties, and may certainly be tried. Where a dazzling scarlet effect is required these Salvias cannot be surpassed, as they produce a blaze of colour in the summer and early autumn until they are destroyed by frosts.

The showy, annual Salvia Horminum var. Blue Beard has bright purple bracts, and a bed or large clump of this is very effective in the autumn. It may be raised from seeds which germinate readily, and should be sown within the next few weeks. This Salvia is somewhat hardier than the varieties of S. splendens, and may be planted out so early as possible in the spring. The plants should be planted fairly closely together, for a thin bed or clump is not satisfactory. Salvia farinacea is another species that is worth growing; it succeeds under similar conditions to those suggested for S. Horminum.

Salvia patens is well-known and is afforded a very high place in the floral world; it is acknowledged to be one of the finest blue-flowered plants in cultivation. Except in the warmer parts of the country, the tubers of this Salvia are usually taken out of the ground in the autumn, and stored in ashes or leaf-soil. If it is necessary to increase the stock, a number of the roots may be potted or placed in boxes and put in a warm house. Young shoots will soon appear and may be removed and inserted in light, sandy soil, in the propagating pit.

A very attractive combination for a large bed consists of a groundwork of this Salvia with Galtonia candicans planted sparsely amongst it, and a suitable white edging-plant. In the milder parts of the country and in a warm light soil, the roots of both the Salvia and the Galtonia may be left undisturbed for several years; both will increase in strength and make a beautiful display each season. *J. G. Weston.*

EARLY-FLOWERING CHRYSANTHEMUMS

A further trial of early-flowering varieties of Chrysanthemums was made at the Cheshire School of Agriculture, Reaseheath, during 1927, all the varieties being grown under similar conditions—conditions believed to be fairly typical of northern England. The plants were grown both disbudded and naturally, in beds twelve feet by four feet six inches wide, the plants being placed eighteen inches apart.

The season was characterised by a dry spell in May, and cool, wet conditions for the remainder of the year. There were, however, no early frosts, and all varieties had a chance of blooming well. All varieties were late in flowering, in some cases nearly three weeks behind time.

The following is a description of the varieties tried, some for the first year, and some for the second owing to their not blooming last year or because an extended trial was needed to determine their value:—

Afterglow.—This we considered to be not sufficiently robust in 1926, but it certainly improved in 1927. It is of a pleasing bronze shade, but did not disbud well.

Border Beauty.—A very beautiful September-flowering Chrysanthemum, upright in habit; colour, amber-buff with a darker centre. Disbudding did not markedly increase the size of the flowers.

Bronze Early Buttercup.—Very beautiful, both disbudded and as a spray, and the earliest of the bronze sorts; a very valuable acquisition.

Cranford Cream, Cranford Red and Cranford.—A description of these was given previously, and although severe disbudding was carried out in 1927, we fear these varieties are of little value as their colours are washy.

Crimson Circle.—This has improved as a selling variety. It is very early and bunches well. It gives a very nice flower when disbudded, although not of a large size. Worth growing.

Chancellor. — This has a most pleasing colour, as its raiser states " a soft amber suffused apricot." Its growth is dwarf, but it flowers profusely and is early.

Chestnut.—This flowered early in October and its colour was very bright. Very suitable for bunching; rather tall; gives a fair-sized flower when disbudded.

Euphie Ritchie.—A beautiful variety of a rich-orange colour with gold reverse. Would make a very good bedding sort. Disbudding does not improve its size.

Gold Dame.—Pale yellow; flowers on the small side; will be discarded in 1928.

Guinea Gold.—A beautiful gold colour, not a very strong grower and the flowers not large. Would make a good bedder.

Golden Ritchie.—Evidently this is a primrose sport from Framfield White, and has all the good characteristics of its parent.

G. R. Hill.—Has a very indistinct colour; not recommended.

Hazelmere.—A good bed planted thickly would be excellent for providing cut flowers. August-flowering; colour chestnut; not a strong grower.

Hesperus.—Very like Chestnut in every respect. An Almirante type.

J. M. Johnson. After the style of Mrs. R. Druit; white; weak grower and of little value.

Illuminator.—The flowers show up well under artificial light; a salmon shade; a poor seller.

Janet Wyper.—A very pleasing creamy-white variety, producing good sprays on long stems. An excellent variety for the cut-flower trade.

Litchfield.—A Peach-pink; large flowers and stiff stems. Disbuds well, and blooms in August.

Litchfield Bronze.—A strong grower on our soil; good when disbudded or in sprays. A definite, bright bronze of a light shade; height three feet six inches.

Mrs. Jack Pearson.—A great favourite in the market and an excellent early bronze. Disbuds well or does well in sprays; two feet to three feet.

Mrs. E. Arkwright.—A good grower that gives excellent sprays and disbuds well. Crushed-strawberry in colour. A great favourite with all visitors to the trial ground; two-and-a-half feet high.

Mayford White.—Much after the manner of Framfield White and very little improvement on it.

Mrs. Phil Page.—An improved Mrs. J. Pearson, being bright chestnut-red; excellent for cut-flower purposes; sells freely and disbuds well, although its size is not increased enormously thereby. Early; two-and-a-half feet high.

Mrs. J. Whitehouse.—Very much like Hotspur; flowers incurving, crimson, with gold reverse; disbuds well and is a free grower; September; two-and a-half feet; recommended.

Nancye Thomas.—A small bronze, Pompon-flowered type, sixteen inches in height; useful as a bedder, but of no use commercially.

Mrs. R. Druit.—Like a very large Roi des Blancs, but does not withstand bad weather well; two feet; not recommended for outdoor cultivation.

Peter Pan.—A Pompon bedding variety of a pleasing shade of terra-cotta; flowers profusely; height eighteen inches; of no use commercially.

Periscope.—A fine single yellow and upright grower; one of the best yellow singles yet seen. (A new one in the trials, not yet introduced, was even better).

Phoenix.—Excellent for sprays and did well when disbudded; a very fine variety for cutting.

Pink Dame.—A very soft pink; does not disbud well; a good early cropper.

R. Vincent.—A very beautiful pink and a very strong grower; disbuds excellently and is a useful spray variety; three feet six inches.

R. A. Roots.—Very late, flowering at the end of October. It is a beautiful white, does well disbudded, and makes a good plant.

R. G. Collicott.—A good robust grower; flowers incurved; colour very variable—bronze, in some cases mahogany; early October; three feet.

Salmon Queen.—A rich salmon; very good when disbudded and probably related to Silver Queen.

Silver Queen.—An excellent variety and a healthy grower, giving flowers of a very pleasing shade of pink with silver reverse; incurving at the tips; disbuds well, giving flowers six inches across. It blooms late in September and is a good variety.

Shirley Bronze.—A weak to moderate grower on our soil; flowers did not open freely. Not recommended for the north.

Shirley Pride.—A very bright pink; it was disbudded well in 1927 and proved more valuable; a coming Chrysanthemum. Splendid when bunched.

Tarzan.—White, with splashes of pink; the colour does not seem to be fixed; a poor grower.

Minstrel.—Deep plum colour and a strong, robust grower; size not increased by disbudding; flowers early in October.

Mauve Queen.—Disbuds well, but its colour is against it from a sales point of view; a strong grower.

In publishing the above notes, I have endeavoured to keep in view the requirements both of commercial and private gardeners. Since writing my last report I have received a very large number of letters from growers and raisers of new varieties in various parts of England, and I desire to acknowledge the assistance many correspondents have rendered in the arrangements for the conduct of these trials. I have also to thank Mr. P. Shaw, head gardener at Reaseheath, for the care and interest he has displayed, both in regard to cultivation and in recording the results. *W. E. Shewell-Cooper, C.D.H., Horticultural Superintendent, Reaseheath, Nantwich.*

INDOOR PLANTS.

NEPENTHES.

It is generally supposed that Nepenthes require special conditions for their successful cultivation; most of them may, however, be successfully grown in any plant stove where a minimum winter temperature of 60° to 65°, rising to 70° or more during the summer months, can be maintained. Atmospheric moisture is also essential.

Towards the end of February old plants that have become straggling should be cut back, and should be given fresh compost, consisting of brown fibrous peat and Sphagnum-moss, with the addition of charcoal. Nepenthes are most satisfactory if they are grown in Orchid baskets; when growing freely during the summer months, they enjoy ample supplies of water at the roots.

The shoots of the varieties bearing large pitchers should be stopped when the required number of leaves and pitchers has formed; great care must be taken not to injure the young pitchers while they are forming.

Most Nepenthes are easily propagated by cuttings of well-ripened, one-year-old shoots; the base of the cuttings should be inserted through the hole in the bottom of small inverted flower pots and stood on fibre in a close propagating case, with ample bottom heat. *J. C.*

HUMEA ELEGANS.

At one time it was considered a difficult task to produce good specimens of Humea elegans, but now it is such a simple matter that one wonders why this handsome plant, with its long, feathery panicles and distinctive scent, is not more widely grown.

Young plants raised from seeds sown last year and grown slowly, are now filling six-inch pots with roots, and may be repotted into their flowering pots. Seeds should be sown in June, and the seedlings pricked singly into small pots, not boxes, so soon as they are large enough.

The subsequent culture consists of moving them into larger pots when necessary, using a compost of loam, leaf-soil and plenty of broken lime-rubble. Grow them under cool conditions and only use sufficient fire-heat to keep them free from frost. They must also be kept free from insect pests, and it is odd that although they have a pronounced odour, which one would imagine would deter insects, still they are subject to attacks from green-fly and red spider, while during last year, even white fly was discovered taking up its abode on the undersides of the young leaves. *A. T. Harrison.*

EPACRIS.

The various members of this genus are charming subjects for conservatory decoration. As they pass out of flower they may be cut back and placed in a house where they may be kept fairly close and moist until they start into growth again. They should then be repotted, if necessary, using for this purpose a compost of sandy peat; firm potting is necessary. As growth and the season advance, the plants may be accustomed to perfectly cool and airy conditions. Young plants raised from cuttings rooted last year should be potted on as they require it, care being taken against over potting; excellent plants may be grown in five-inch pots. The growths should be stopped several times, but this should be done early, as long, well-developed shoots are required by the autumn, six to eight good shoots being sufficient for a plant growing in a five-inch pot.

The more upright-growing Epacrises, of of which there are, or were, many, should be cut back after flowering; on the other hand, E. miniata, syn. E. longiflora, that has long, straggling shoots, should not be pruned, except in the young state, when the foundations of good specimens are being laid. The long shoots of this subject should be tied to suitable supports; in time plants of this species may be grown into huge specimens. Epacrises are easily raised from seeds, while good varieties should be increased by means of cuttings treated in the same manner as those of the South African Heaths. The cuttings should consist of small, twiggy, half-ripened shoots. Great care is necessary when trimming them, as the leaves, when being removed, are apt to strip the bark. They root in pots of fine, sandy peat, under bell-glasses, in a cool house. *J. C.*

ACOKANTHERA SPECTABILIS.

In Acokanthera spectabilis we have a fine, sturdy, evergreen, winter-flowering shrub, which should, wherever sufficient heat is available, be included in the collection. The clustered, white flowers are produced in abundance in the axils of the leaves, and are very fragrant. The plant requires moist stove treatment and protection from the bright sun. The compost most suitable is loam and leaf-mould in equal parts, a little charcoal, and enough sand to keep the whole open. It is easily propagated in spring by cuttings of young wood, inserted in peaty soil under a bell-glass. A. spectabilis grows from four feet to six feet high, is a native of South Africa, and was first introduced to this country in 1787. Natural Order Apocynaceaes. *W. H. C.*

IMPATIENS.

This genus includes a number of easily-grown plants that are very useful for furnishing the conservatory. Impatiens Sultani and I. Holstii are easily raised from seeds sown during this month. If the resultant seedlings are grown in an intermediate house they soon make useful plants. I. Holstii varies considerably from seeds, and any good colour forms may be propagated by means of cuttings; specimens of I. Sultani and I. Holstii that were raised from cuttings rooted last autumn are now ready for placing in their flowering pots.

I. Oliveri, with its delicate, rosy-mauve flowers that resemble small Miltonias, blossoms practically throughout the year, and makes large specimens if planted in borders or grown in large pots or tubs, while young plants in six-inch pots are useful for furnishing the stages. This species may be increased at any time, by means of cuttings, as also can I. Hawkeri, a handsome plant which, however, demands a higher temperature, and may be regarded as requiring stove treatment.

I. kewensis, a hybrid between I. Holstii and I. Herzogii, is also a very elegant and useful decorative plant. *J. Coutts.*

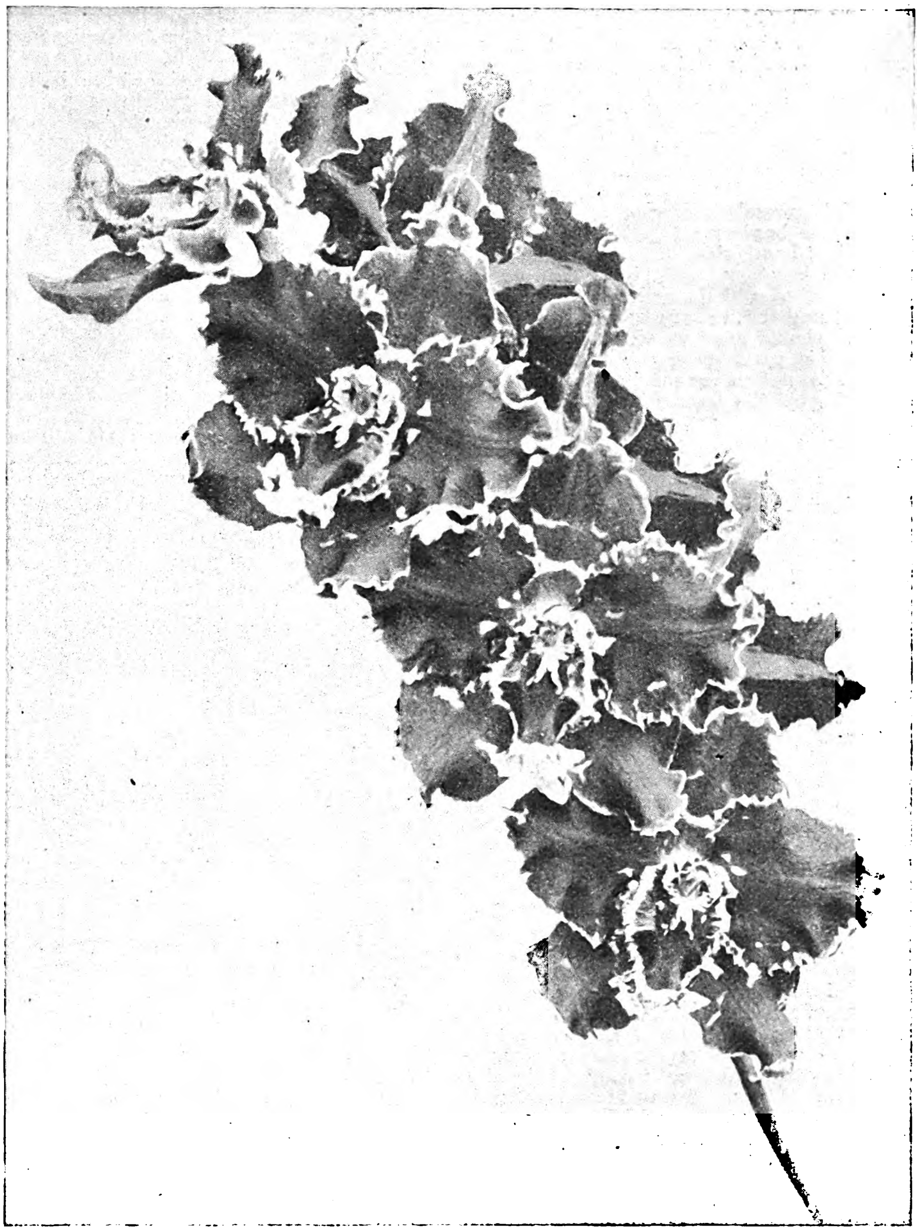

FIG. 69.—ODONTOGLOSSUM THETIS.

R.H.S. Award of Merit, February 14. Flowers purple-brown and white. Shown by Messrs. J. and A. McBean. (see p. 126).

ORCHID NOTES AND GLEANINGS.

MEXICAN LAELIAS.

The Mexican Laelias form an interesting and useful group of autumn- and winter-flowering Orchids. L. albida, L. rubescens, L. superbiens, L. autumnalis, L. Gouldiana, and the dark-coloured varieties of L. anceps generally flower at the end of the year, while the white varieties of L. anceps are usually at their best during January. These numerous varieties require similar treatment; they resent root-disturbance, therefore any repotting should be done with a view to leaving the plant undisturbed for two or three years. After they have flowered it is advisable to let these Orchids rest in a cool, airy position, to be started into growth when more solar-heat is available. Baskets or pans are suitable receptacles in which to grow Mexican Laelias.

All these Orchids require is an open compost of Osmunda-fibre and a little Sphagnum-moss; this should be inserted firmly about the roots. Each lead may be potted singly, or if specimens are desired, several leads may be evenly arranged in each basket. Water sparingly for a few weeks, and suspend them in the intermediate house, in a position where plenty of light and a free circulation of air is available. Spray the surroundings lightly on favourable occasions to encourage root action, and as the season advances and the young growths develop, both the plants and the surroundings should be sprayed more frequently. The shading may be removed early in the afternoon to permit a rise in the temperature, while the ventilators may be opened in the evening wide enough to allow a free circulation of air around the plants during the night. *W. G.*

NOTES FROM WISLEY.

A feature of growing interest and importance at Wisley is the commercial fruit trials. They were commenced in 1923, and already occupy twenty acres. They consist of standard and bush fruit trees interplanted, and each variety on trial is represented by not fewer than forty trees in the case of top fruits, by twenty of small fruits, and by one hundred plants in the case of Strawberries. The total number of varieties that are being tried now exceeds 250. In addition to the trials proper, many acres are devoted to a collection of all kinds of hardy fruits, which serve for comparison. Every effort is being made to preserve specimens of old varieties which are in danger of being lost to cultivation. Any fruits that would seem to show commercial value are sent out to each of ten sub-stations, situated in various parts of the country, for further trial. The total number of plants propagated and sent out from Wisley during the past season is approximately 7,000.

The trial grounds are approached through the new Rose borders; these are to be found on the right-hand side of the road leading from the laboratory to Wisley village. It will be seen that a high standard of cultivation is in force, and the liberal manuring which has been given should greatly assist the growth of the trees this year. Owing to the persistent rains it has not been possible to complete the spraying of the trees with tar-oil washes before the bursting of the buds, so that it is possible some trouble may be experienced from the attacks of insect pests and fungous diseases.

A few shrubs are in flower, such as Hamamelis japonica var. arborea, H. j. var. Zuccariniana and Cornus Mas, the Cornelian Cherry, all of which are leafless when in bloom. Others, such as Nuttallia cerasiformis, are just preparing to open their blossoms. The ground in many parts of the wild garden is now thickly carpeted with Narcissus cyclamineus, Snowdrops and Winter Snowflakes. The latter include Leucojum vernum var. Vagneri, which is much larger than the type, and has perianth tips strongly marked with green.

Some new herbaceous borders have been made lately on the grass lawn which occupies the centre of the new flower-trial grounds. They include many good varieties of Delphiniums that should be a welcome feature as there are few or none planted in the existing herbaceous borders.

Under glass, many of the Lachenalias on trial are blooming freely, both vari-coloured kinds as Lachenalia pendula superba and self-coloured yellow-flowered varieties, one of the best of which is Leiden. In the same house, a few of the Freesias on trial have also commenced to bloom and are a pleasant source of fragrance.

In the alpine house large numbers of Saxifrages, mostly white-flowered varieties belonging to the Kabschia group, are in bloom. A more colourful note, however, is struck by the vivid blue flowers of Lithospermum rosmarinifolium. *J. E. Grant White.*

NOTES FROM EDINBURGH.

Since the opening of the New Year, the weather conditions have been the worst experienced for many years. Three-and-a-half inches of rain fell during the month of January, and short, sharp frosts, showers of snow and sleet have been frequent. General work was impossible at times, and the conditions generally have had a tendency to delay the blossoming period of spring flowers which otherwise would have been a source of beauty and attraction.

Despite this, the more robust harbingers of spring are making their presence felt, and slowly but surely will add their quota of beauty. In January the common Snowdrop alone held its head up to the storm, to be followed by the Snowflake, Leucojum vernum, with its erect stem of pendulous, fragrant, white flowers. This genus comprises a few species which are well adapted to naturalisation in the same way as the Snowdrop. L. vernum is suitable for the rock garden or the border, and is an exceedingly pretty bulbous plant.

In sheltered nooks in the rock garden some species of Crocus have had enough protection to allow them to open their buds. Those that flower from December to January are liable to receive injury from frosts and should have some temporary protection; certain kinds are only suited for cold-frame culture. Planted in a wall-border facing south, such species as C. biflorus, C. chrysanthus, and the variety E. A. Bowles, C. Imperati, C. aureus, C. Sieberi, and C. vernus are now in full splendour. When partially covered with snow they seem even more attractive, and during each blink of sunshine the yellow, blue and violet colours are shown to great advantage against the white background.

In shady corners many Hellebores, with white, green, purple or rose-coloured flowers, make a welcome addition to the short list of spring-flowering plants.

The pretty little hardy, tuberous-rooted Winter Aconite, Eranthis cilicica, is one of the earliest gems for woody situations. When grown in clumps and producing its yellow, Buttercup-like flowers, it is most charming, and is well worth its place in any general collection.

Hacquetia Epipactis, three to six inches high, in a corner of the rock garden, is flowering beautifully. Its small yellow flowers are borne on short pedicels, and at first sight resemble the blooms of the Winter Aconite, but closer inspection reveals the fact that it belongs to another Natural Order, *i.e.*, Umbelliferae. This plant is a slow grower and resents disturbance, but when well established no difficulty is experienced in managing it. Some of the species of Petasites are unique, if not beautiful. P. japonicus and P. fragrans are now representing the genus; the heads of white composite flowers have ample time to develop and decay before the large, umbrella-like foliage comes to maturity.

The yearly display of Primula Winteri is no less remarkable this season than that of last year. One plant in particular has produced over one hundred beautiful blue flowers. P. vulgaris and varieties, P. pannonica and P. heterochroma are adding touches of brightness to the rock garden, pond side and wild garden.

Some pinkish specks—the flowers of Rhododendron dauricum and R. mucronulatum—attract the eye from a distance. Provided there is open weather, they will develop many beautiful flowers. R. Nobleanum is another of the early-flowering favourites, and if sheltered from high winds, and frost being absent, it shows its bright crimson trusses to advantage. In the rock garden R. parvifolium is nearly at its best and disaster from early frosts has not yet overtaken or spoiled R. moupinense, one of the earliest gems of the Rhododendron family. *A. McCutcheon.*

AMERICAN NOTES.

WINTER-FLOWERING ANNUALS.

Compared with Britain, we in North-eastern America enjoy a much greater intensity of light during the winter months. Even during December we experience days of sunshine such as would gladden the heart of an English gardener in May or June. On January 2 the sun was shining brilliantly, although the thermometer registered 20° of frost in the morning, and a bitterly cold wind blew so soon as the sun went down.

Under glass, however, temperatures may be artificially created, and so, thanks to the amount of light we receive, it is possible to cultivate annuals for winter-flowering by following a plan which could only result in failure if attempted in the old country. The admonition so frequently heard in British establishments to "keep the plants close to the glass to make them sturdy" may be disregarded with impunity in American greenhouses, for they do not become drawn even when placed several feet away from the glass.

The plants for supplying cut flowers in winter are planted in benches having about an eight-inch or nine-inch depth of soil, and in the higher part of the house the soil-level is at least ten or twelve feet away from the roof-glass. In effect, the growing conditions are exactly similar to those under which the plants are grown outside during the summer, and they flower quite as freely, with the additional advantage that in most cases the flowers are often cleaner and clearer in colour.

Most of the subjects grown are annuals, raised from seeds sown in pots in successive batches from the beginning of August onwards. The seedlings are thinned out in the pots and so soon as they are nicely rooted they are planted out in the benches. Other subjects are grown singly in three-inch pots and then planted out; Sweet Peas are grown from seeds sown in pots and the resulting plants transplanted, and also from seeds sown direct in the beds.

At the present time we have Antirrhinums, Sweet Peas, Larkspurs, Trachymene (Didiscus) coerulea, Calendulas, Mignonette, Cynoglossum amabile, Gerbera Jamesonii and Arctotis grandis, in full bloom and furnishing splendid material for cutting, while successive batches of these, in addition to Salpiglossis, Scabiosa, Coreopsis, Hunnemannia fumariaefolia, and similar subjects are already planted to provide a succession. The more permanent Roses and Carnations also provide a good supply of cut-flowers at this season of the year. *T. H. Everett, Pleasantville, New York.*

FLOWERS ON ST. VALENTINE'S DAY.

The Witch Hazel and the Winter Sweet are passing, and this year Viburnum fragrans, type, is over, but the white form, V. f. candidissima, is later and now at its best. A curious Chinese shrub with dark-green foliage and somewhat inconspicuous flowers brightened by scarlet stamens, Sycopsis sinensis, is just coming into bloom; it is allied to the Witch Hazels. The long, whip-like branches of David's Peach are covered with large, pink flowers, and Prunus Mume will soon be open, as will the various forms of P. subhirtella. The flowers of Cornus Mas and the Forsythias show various stages of development, and Ribes viburnifolia is covered with bunches of pale green flowers. Many Daphnes are in bloom; D. Dauphinii, a hybrid of D. odora, is covered with deep pink flowers; D. Mezereum, both the pink and white forms—although the white form, as commonly grown, is yellowish-white, the true white form having almost disappeared; nor have I seen the double white form for years. D. Blagayana has begun to open its fragrant flowers, while the woods around here are full of D. Laureola. Of the Berberis which are so difficult to distinguish, B. hyemalis, B. Bealei and B. japonica are bearing their long, scented sprays which resemble yellow Lilies-of-the-Valley. Salix daphnoides, with violet twigs and silver catkins, is at its best.

Snowdrops are now very fine, and it is interesting to search for variations among the self-sown seedlings. To-day I found one with a very wiry pedicel and an inner perianth which showed hardly any white. The Crocuses get all over the garden, and from minute to minute I change my preference, but perhaps the greatest joy is to be found in the deep yellow yolks of C. Susianus. Another favourite of mine is the purple-tipped form of C Tommasinianus, while C. biflorus var. Celeste, resembles the pale blue sky of a fine February morning.

The glory of the garden is Eranthis Tubergenii. This marvellous child of humble parents produces immense corms, each carrying some fifty flowers on stems four inches to six inches high, the blossoms being of great substance and size. It is sterile, but may be increased easily by breaking up the corm, and, indeed, increases itself by some underground process in this manner. Some Irises are in bloom, but they withstand the rough weather much less well than other early bulbs. The two varieties of persica, I. Tauri and I. stenophylla, the latter more commonly known as I. Heldreichii, flower well; I. stenophylla, with deep velvety blotches on a lighter shade of the same colour, is a charming plant The hybrid Juno, Iris sind-pers, is opening its first flowers. Although we never succeed well at Burford with the most beautiful of the Hellebores, the Christmas Rose, the other species, including the two native plants, do well; the most remarkable plant is H. Black Night, introduced by Messrs. Barr and Sons. The plant is the colour of Prunus Pissardii nigra, with purple flowers shot with slate and with primrose-coloured stamens.

Hard by, Corydalis angustifolia has thrown up its Fern-like leaves and white flowers. Cyclamen coum is in full bloom. The plant may be distinguished from C. ibericum by the complete absence of marbling on the dark green leaves; the hybrid is, perhaps, the better plant, and the flowers vary from white through all shades of pink to deep purple. It is entirely immune to the worst weather conditions.

In this mechanical age, children find motors more attractive than gardens, and so the children's gardens have been converted into a Heath garden, where a good depth of leaf-mould enables us to cope with the inhospitality of the chalk. Of the forms of Erica carnea which are now out, King George and Vivelli are the most beautiful. Blue Primroses raised from seeds are proving most satisfactory, and it is interesting to find that after so many years these early blue forms have been satisfactorily fixed by the seedsman. We began our outdoor gardening too late to cope with Saxifrages, but a large mass of S. oppositifolia from Cairn Gorm is a riot of jewels. *William Lawrence, Burford, Surrey.*

RHODODENDRON PROSPECTS.

The heavy rainfall and veiled sunlight of the summer and autumn of 1927 caused most Rhododendrons to make exuberant growth and foliage, and this exuberance was encouraged by the paucity of bloom in the spring of that year. The plants were not exhausted, and in August there appeared every prospect of an excellent display in 1928.

The buds, however, continued to expand and, in October, several growers expressed doubts as to their safety, should severe frosts appear. An examination to-day (February 14), shows that these fears were not unfounded. The condition of many somewhat tender varieties is not satisfactory.

Damaged flower buds may be divided into three classes: Those that are destroyed entirely and cease to expand, turn brown and black, and in some cases drop off, but often remain until the following summer. Others are frozen through the pith or centre of the basal stem, which is discoloured, while the outside continues to look green and flourishing for weeks, but in the end the outer bud scales drop one by one when handled, until the weakly expanding flowers are exposed. R. oreodoxa is now suffering in this manner. Then there are those which appear sound, but develop into one-sided trusses of three of four flowers, instead of the full number; the individual flowers are often crumpled or distorted and rarely open freely. If such a bud is cut open the immature flowers will be found closely packed in its interior. It will be noticed that the low temperature has destroyed many of the flowers, and these have turned quite black; others are crippled, while some seem to have escaped altogether.

It seems difficult to account for the mixed result. The blackened flowers are not always on the side most exposed to the weather. Why is one frozen and the other not? It is no uncommon sight, unfortunately, in April to see the flowers and new shoots blackened by severe frosts; that we have learned to expect at intervals. But during many years of experience I have never seen the more tender Rhododendrons lose so much foliage after frost as this season. The ground under large specimens of Beauty of Tremough, Goliath and Gill's Triumph, is thickly covered with blackened foliage. In most cases the flower buds on these varieties are also destroyed. R. Nobleanum is opening incomplete trusses, and the flowers which develop are about half their natural sizes. On that hardy variety Cunningham's Blush—so useful to tone in with purple Heaths—quite half the buds are blackened. R. Hanceanum, introduced by Wilson in 1909, from an altitude of 8,500 feet in Mupin, has a hardy appearance, so it was somewhat of an unpleasant surprise to find its buds blackened internally. The foliage of R. arboreum var. Blood Red is somewhat discoloured, but the buds appear quite sound.

Many of the old-fashioned, sweetly scented greenhouse varieties, such as Countess of Haddington, Countess of Sefton, and R. Macnabiana, planted against a north wall, and covered with Laurel boughs, appear uninjured; certainly the buds are safe. The same may be stated of R. Thomsoni and R. Shilsoni. The white variety of Nobleanum and Winter Cheer show no sign of injury, nor does R. Falconeri var. eximium, although its large buds are very far advanced. R. campylocarpum, although crowded with buds, too many in fact, is, of course, later, and so is probably quite uninjured. The swelling buds of R. barbatum, covered with a sticky substance, will soon be open; apparently they are hardier or were beyond the vulnerable stage when the frost occurred.

It would appear then that although flowers of some well-known species and varieties will be missing from collections in unfavourable localities, there will be, even now, if the weather continues favourable, no lack of Rhododendron flowers of high quality, especially of the later kinds. *J. Comber, Nymans Gardens.*

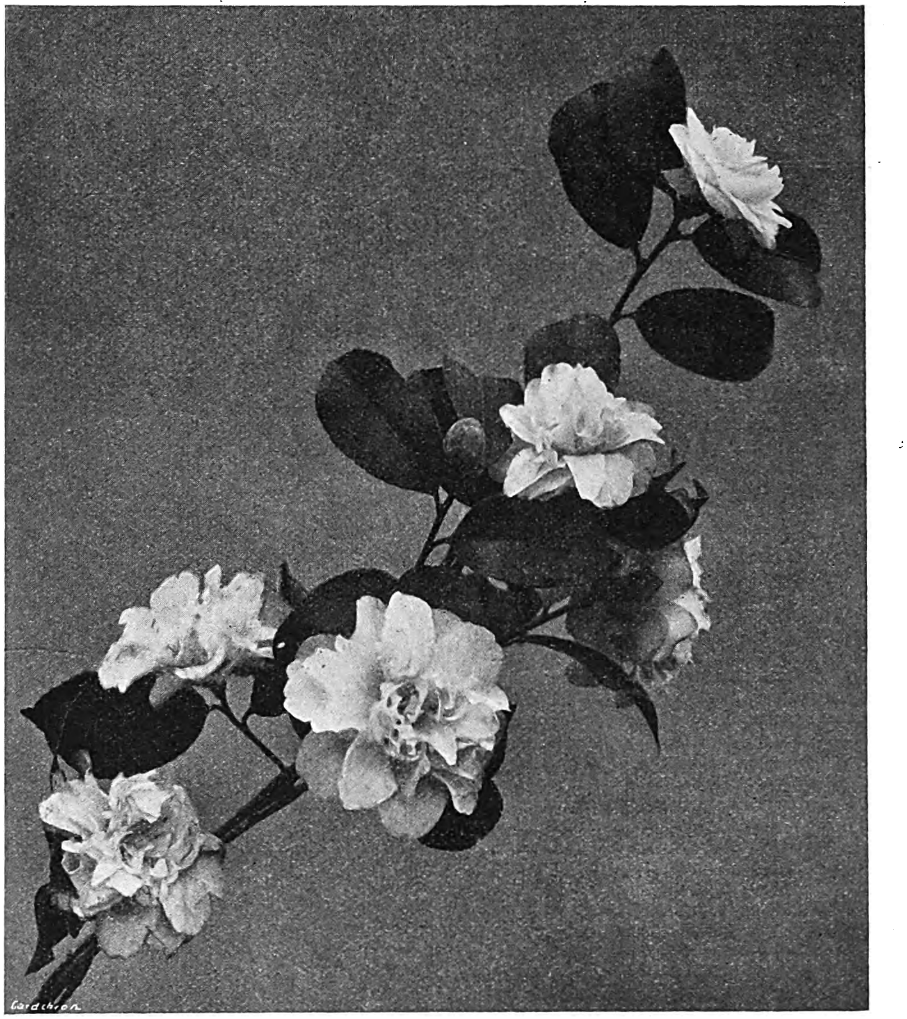

FIG.—70.—CAMELLIA ROSAEFLORA VAR. FLORE PLENO.
R.H.S. Award of Merit, February 14. Flowers deep blush-pink. Shown by the Director, Royal Botanic Gardens, Kew. (See p. 126).

TREES AND SHRUBS.

MITRARIA COCCINEA.

Although introduced so long ago as 1848, this charming little shrub, a native of Chili, is not often seen in gardens, possibly owing to the fact that it is rather tender. I am convinced that it is quite capable of enduring so much frost as many plants that are more frequently grown, for the habit of this shrub renders protection an easy matter. I refer to its love of partial shade. It may sometimes be seen flourishing and blooming in quite sunless spots; this being so, Mitraria coccinea will enjoy the protection of the shrubs or trees that provide the shade it enjoys.

This shrub is generally considered as only suitable for growing in peaty soil, but it will thrive in a light, gritty loam, freely intermixed with leaf-mould. It is a useful subject, therefore, for growing among Rhododendrons of low stature, and when in such company it will often express its partiality to shade by threading long, slender shoots through the lower branches of its neighbours; these break into blossom as they emerge into the light.

Normally, M. coccinea does not grow above three feet in height here, but it is said to attain six feet in the south-west. It is an evergreen and is densely furnished with dark green, glossy, Box-like leaves, while the flowers that swing on long, slender stalks, are bottle-shaped, one-and-a-half inch long, and of a brilliant scarlet. These are occasionally followed by round, greenish-red fruits about half-an-inch in diameter, but as they have not ripened with me I cannot say what colour they ultimately acquire. No attention is required beyond an occasional top-dressing of leaf-mould. *A. T. J.*

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MR. F. KINGDON WARD'S NINTH EXPEDITION IN ASIA.*

XXVI.—The Plains of Assam.

AFTER months of toil and discomfort, to attain one's goal might seem to be the climax of desire; experience proves that it is always an anticlimax. As philosphers have long since discovered, it is the striving, not the attainment which gives satisfaction. On reaching the bungalow at Theronliang, even late at night, the whole world, time, everything, seemed suddenly to stand still. My satisfaction was, of course, the greater in that the getting there represented not only the end of a long and, on the whole, successful sojourn in the wilderness, but was accomplished in the face of a difficulty which, at the eleventh hour, had threatened to wreck the whole plan. And here I was, with my collections safe, back on the fringes of civilization; for the moment, at least, there seemed nothing more to strive for. After the intense action of the past few days, reaction hit me almost like a physical blow. Of course there was no sleep to be had that night, or very little. I tried to telephone through to Sadiya, but all the offices were closed long since. Then I had an enormous fire lit—it was quite cold enough for that; also I had some dinner, and a hot bath, and sat reading most of the night.

Word came through on the following morning that I was to be given Government coolies to take me to Denning on the other side of the hill, where the cart road ends. However, we made such a late start that there was no chance of reaching Denning the same day, since it is a twenty-mile march.

Now I was able to look about me. We were in the narrow Tidding valley, with high hills, covered with dense forest, all round us still. But right above the bungalow was a low gap, the Tidding saddle, to which a well-graded path climbed in long zig-zags; and down the far side of this range one descended to the plains. Though only about fifty miles from Sadiya in an air line, the distance by road was more like seventy miles, on account of this intervening ridge.

Having paid off all my Mishmi coolies and guide, I was supplied with Nepalis, kept here for carrying rations, or the kit of officers on tour; and towards midday we started on the last climb. Before starting I telephoned our safe arrival to Sadiya, as the Political Officer might be getting anxious about me, being a fortnight overdue. We had about twelve miles to go to the next bungalow, a short distance down the other side of the range; by taking the short but steep cuts, this could be greatly reduced, although we could not reduce the height of the Tidding saddle, which is 6,000 feet by either way.

There were some fine Sago Palms down below in the sub-tropical forest (Fig. 73), and I noticed also species of Bauhinia and other Leguminosae, species of Ficus, Dipterocarpus, and so on. The forest was evergreen, though towards the summit one meets with scattered deciduous trees. Higher up, the banks of the cutting were clothed with flowers, such as one meets with under similar conditions on the upper Irrawaddy. A dull hued Codonopsis was still in bloom, and a coarse Lobelia with muddy-purple flowers; there were various species of Polygonum in profuse masses, climbing Compositae, a wealth of Acanthaceae, Clematis, and so forth. A regular tree Begonia with immense leaves grew in shady thickets, and the small, white-flowered one was abundant in sunny places. Griffith, nearly a century ago, collected six species of Begonia in the Mishmi Hills, and I noticed five species, only two of which were in flower. Equally abundant on cliffs, growing in the deepest shade, was a species of Chirita with long leaves; it was new to me, but I found only two plants in bloom. Another species, with yellow flowers, was a familiar Burmese plant; Gesneraceae should, of course, be common in these hills.

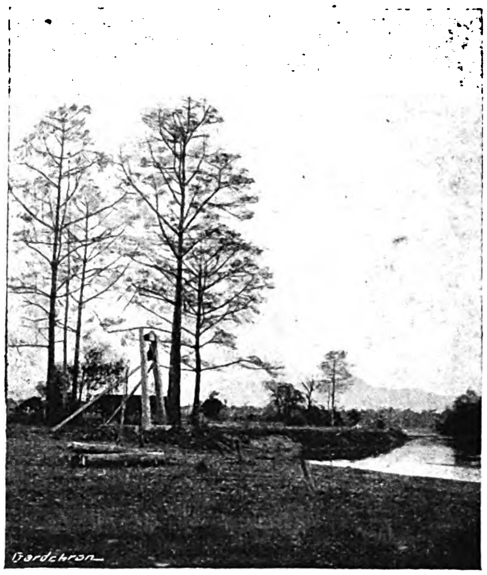

FIG. 71.—BOMBAX MALABARICUM ON THE ASSAM PLAIN.

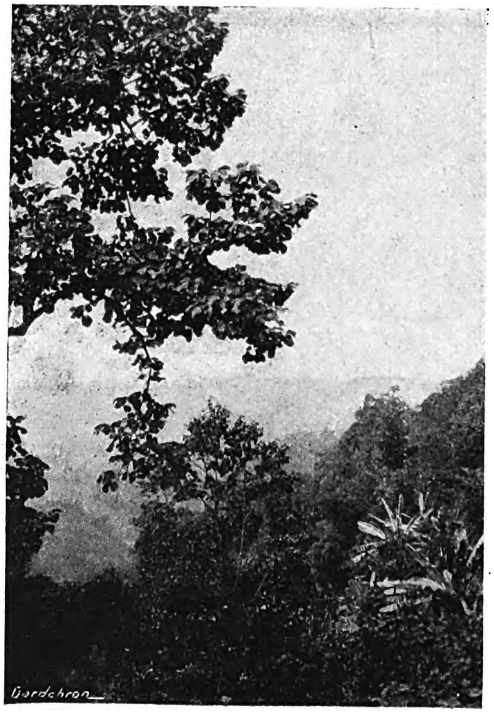

FIG. 72.—FIRST VIEW OF THE ASSAM PLAIN ON THE JOURNEY FROM BURMA TO ASSAM.

It was a long pull up the hill to the saddle, and the sky had become somewhat overcast before we reached the summit, otherwise we might have had a fine view up the Lohit valley, as it was we caught sight of Dapha Bum, a needle peak over 15,000 feet high, sticking up through the cloud bank, on the Burma-Assam frontier. I rather expected to find a last Rhododendron on this ridge—it was high enough for a 'Maddeni,' or an 'Irroratum,' or even a 'Stamineum'; unfortunately, the pass is a depression, or saddle, not an exposed ridge, and that rather spoilt the chances. Descending the other side, I did notice seedling 'Maddeni' Rhododendrons on the bank, but could not spot a mature parent. Probably it was R. formosum.

It was late when we reached the saddle; already the air was chilled. From the actual summit we could see nothing, being enclosed by forest. However, we had hardly begun the descent when, without warning, there burst upon us an amazing and never-to-be-forgotten sight. The face of the ridge on this side is very steep, and the path slants to and fro in long, easy inclines, with a high bank on one side, and an almost sheer drop on the other. Consequently one can look over the tops of even the highest trees to the far horizon. The sun was now dead ahead of us, and low in the sky; we should indeed have had it full in our eyes, but for a level belt of cloud drawn right across the sky, its lower edge firm and hard like the sea-line. Behind this belt the sun was hidden, illuminating the scene from the rear. Right below us, the hills suddenly ceased, as though trimmed off with a knife, except where two long spurs which framed the face, flared sharply into the sunset; and there at our feet, stretching away league on league until it was swallowed up in the reeking embers of the winter's dusk, lay the plain of Assam.

From this height, the plain, which was covered with forest, looked like a huge park; but across it, brazenly lit by the rays of the setting sun, which splashed out in golden fountains from behind the cloud wrack, a maze of rivers flowed to swell the Brahmaputra. Most impressive of all was the Lohit itself. The sun peeped out from a far corner, and shone on to the swift, winding river, which we had followed through the hills. Here, where it rushed out of close confinement, its speed was checked suddenly on the level plain, and it gave a wriggle of delight at finding itself free; then proceeded to spread itself out in a network of streams, covering a wide expanse of barren sand. And now all these placid channels were caught in the flame of the setting sun, and blazed like molten gold.

Northwards, the view was truncated by ranges of mighty mountains, through which broke other great rivers, invisible in the gloaming. For the next half-hour, while we slid two and fro on the gigantic loom of the hill, we caught glimpses of this astonishing silted sea below, partly illuminated by enormous streaks of raw colour, trailed comet-like across the face of the sky, partly in the deepening shadow of night. Gradually the middle distance disappeared into the wringing mist, as it was squeezed out of the cooled air.

It was with difficulty that I tore myself away from the contemplation of this scene, and all that it stood for—villages, cultivation, cities, crowds and crowds of people, linked into vast societies—civilization itself.

The colours faded and altered; hot crimson changed to a cold indigo, indigo dimmed to grey. And so night came, and at dark we reached Dreyi (5,160 feet), a windy bungalow, gloriously situated on a spur commanding a view of the plain below, and the ranges which buttress the eastern end of the Himalaya. The plain was misty in the early morning, but there was a fine view nevertheless, although it lacked the colour of the preceding night. Four hours easy march brought us to Denning, about forty-five miles from Sadiya, and the end of the cart road. Denning outpost, from above, appears to be on the plain; actually the plain slopes up very gradually, but perceptibly to the foot of the hills, and Denning has twice the rainfall of Sadiya, 180 inches against 90! On the way down the hill I noticed masses of Coelogyne ochracea. The grass along the roadside almost reminded me of England, a vision which was rudely shattered presently by enormous clumps of Bamboo and exotic flowers.

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* The previous articles on Mr. Kingdon Ward's Ninth Expedition in Asia were published in our issues of August 14, 28, October 9 and November 20, 1926, and January 1, February 19, March 5, 19, April 9, 30, June 4, 18, July 30, August 20, September 10, October 1, 15, November 5, 10, December 3, 17, 21, 1927, and January 14, 28, and February 11, 1928.

At Denning I got in touch with the Political Officer by telephone, and he told me that his car, which he had sent out to meet me, had broken down, but that if I would start on foot the following day, I might meet it on the road, either in running order, or in the process of being repaired.

Being determined to reach Sadiya next day, December 9, even if I had to walk the whole way, I was up at 4.30 and had breakfast soon after. Having seen all the kit loaded on to two bullock carts, I left one of the men to travel with the carts, and started off to walk about twenty-four miles to meet the car. It was delightful to be on a real road again, even though it was only a 'dirt track,' and we started off at a good four-miles-an-hour, and kept it up for three hours. Then it began to get hot and I slowed down a lot. At last we reached the Digaru river, which we had to wade, sinking knee deep into the soft sand. Going on again, we met the car after covering twenty-two miles, and repairs having now been effected, we were able to go straight on to Sadiya, which we reached by tea time. Here I was entertained by the Political Officer, and enjoyed several days' much needed rest; in the meanwhile I got my seeds packed and dispatched to England and sent wires to Rangoon and Fort Hertz announcing my safe arrival.

The Sadiya plain is a vast park, with patches of cultivation and high grass, but chiefly scattered trees, especially Bombax malabaricum (Fig. 71). The Lohit is about a thousand yards wide, but a great deal of this, in the winter, is sand bank; only in the rainy season does the river fill its bed, and it is cutting heavily into the high bank on the Sadiya side. The railway terminus is on the other bank, but when I started by launch a few days later, I went straight down the Lohit to where it joins the Brahmaputra, and so down the main river to Dibrugarah, whence I took train to Chittagong. Being without any clothes, I did not feel equal to facing the crowds of Calcutta. However, Chittagong proved a horrible place, hot and passionately dull, and it was three days before I could get a coasting boat for the three days' voyage down the Arracan coast to Rangoon. We put in to several ports, the most picturesque being Sandoway, and in the early morning of Christmas Day, tied up alongside the quay at Rangoon.
F. Kingdon Ward.

(*The End.*)

FLOODS AND THE LAW.

The unfortunate experiences of many gardeners as a result of the recent floods merits, I think, some explanation of the legal rules which arise in such cases, and the consideration of such questions as whether a man is allowed to protect himself against floods if his method of protection is likely to prejudice injuriously his neighbours, and to turn the water from his land on to the land of A or B, and the question of whether, when the flood water has once come on to his land, he can carry out such works as will turn it from his land on to the land of someone else.

In the first place, of course, as a general legal rule, a man is entitled within certain very wide limits to do what he likes with his own property, and so he is allowed to protect it in any way he may choose from such dangers as floods. This statement of the law obviously gives rise to the question, Does the protection of one's land in such a way as to necessarily cause the danger forestalled doing damage to the property of one's neighbours come within these limits? And on this point it has been decided that a man may protect his own property from expected floods, even though as a result of his doing so he may injure very seriously the land of his neighbours, by turning the flood water from his own property on to their property. Thus A, when he realises that a flood is coming which will seriously damage his land and premises unless prevented from reaching them, is entitled to build a bank or take any other precautionary measures on his own land, to prevent the water reaching it.

The next question to be considered is, can a man when once flood waters have come on to his property, turn them off his land on to the land of his neighbour? On this point I may quote the case of Whalley *v.* The Lancashire and Yorkshire Railway Co., Ltd. In this case the railway company's permanent way ran over some flat country on a low embankment by which it was carried a little higher than the adjoining land, and on each side of which was a ditch to drain the railway. There was an extremely heavy storm and rainfall which blocked up and over-flooded the drain, so that a large quantity of water was dammed up against the south-east side of the railway embankment. This water rose so high that the railway company had some trenches made in the embankment by which the water escaped to the other side of the permanent way, and flowed on to the adjoining land and on to the land of the plaintiff, doing a great deal of damage to his crops. The question to be decided by the Court, as put by the Judge who tried the case, was, "When the water, by an extraordinary misfortune, had come to rest against the defendant's property had they a right, in order to save their own property, to do that, the necessary effect of which was to injure their neighbour's property?" And this question he answered by saying that an extraordinary misfortune had fallen upon the railway company, and that if they had allowed things to remain as they were, they would have been the sufferers, but in order to get rid of the misfortune they had done something which had brought an injury upon their neighbours and they must be responsible for the loss they had caused them.

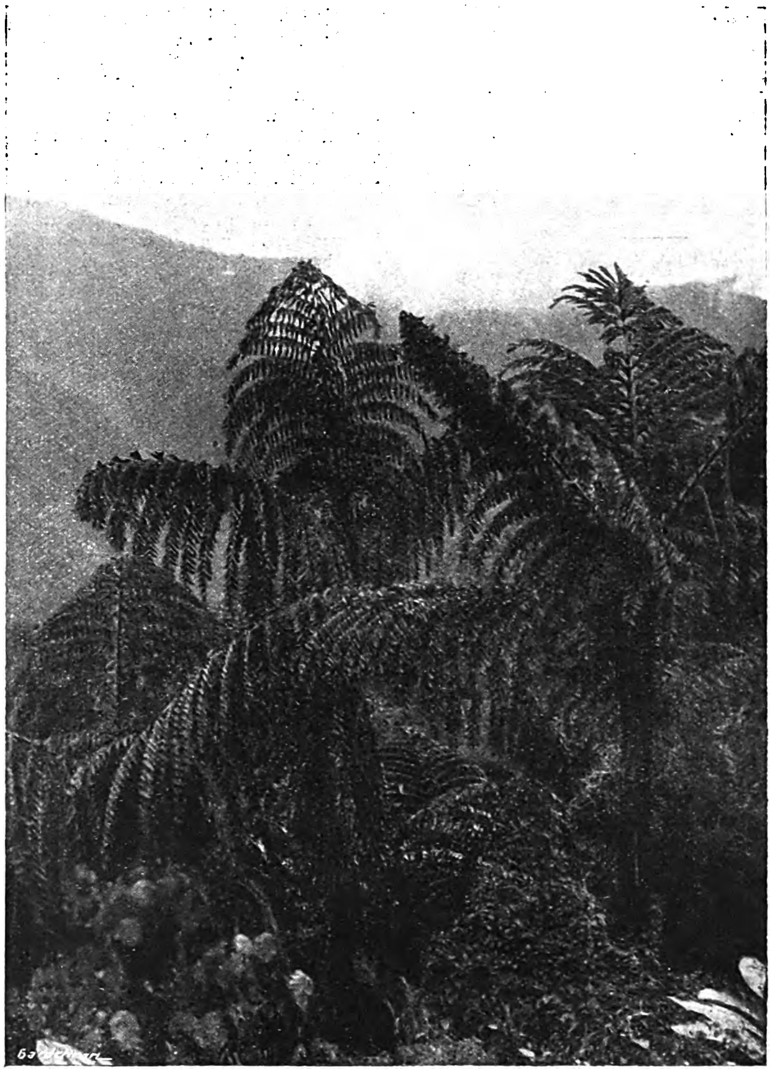

FIG. 73.—SAGO PALMS AT THERONLIANG.

I think I should mention that the learned Judge distinguished this case, where the danger was already present, from the case where it had not yet arrived, saying that if some extraordinary danger—such as a flood—threatened a man, he would have the right to defend his property against it *before* it had occurred to him.

In conclusion, it must be mentioned that where a man collects water artificially on his property, as where he builds a reservoir or an artificial lake, he must prevent its escape, and is liable for all the natural and probable consequences of its escape, even if he has been guilty of no negligence. Thus he is liable not merely for causing its escape, but also for failing to prevent an escape. In the famous case where this point was argued, the defendants built a reservoir on their land, and through no negligence on their part, the water damaged the property of someone else. The case went to the House of Lords, and the owners of the reservoir were held liable, Lord Cranworth saying that "if a person brings or accumulates on his land anything which, if it should escape may cause damage to his neighbours, he is responsible, however careful he may have been, and whatever precautions he may have taken to prevent the damage."

There are exceptions to this rule, however, and in the case of flood water the most important is probably the exception which is known as "Act of God." In the case on this point the defendants had certain artificial pools formed by draining a natural stream. The embankment and weirs were well constructed and adequate for ordinary occasions. A very violent storm, however, broke down the embankment and the water rushed down the stream and carried away some bridges. The Court held that in spite of the decision of the House of Lords in the case I have just cited, the defendants here were not liable, since there was no negligence on the part of anyone and the damage was due directly to the Act of God, the unprecedented rainfall being described by one witness as the heaviest within human memory.

There are other exceptions to the general rule of absolute liability, such as where the plaintiff has given his consent to the act of the defendant, and possibly where the direct cause of the damage is the result of some stranger, although in this instance, the exception is somewhat doubtful, and lastly, the exception known as statutory authority, that is where the works which caused the damage were carried out in pursuance of some public duty of the defendants. *H. A. Sharman.*

PLANTS NEW OR NOTEWORTHY.

SOME NEW SIAMESE PLANTS.

Sonerila deflexa and S. fusca.

The former was raised at the Cruickshank Botanic Garden, Old Aberdeen, from tubers collected by Dr. Kerr in Chantaburi circle on Kao Soi Dao at about 1,200-1,400 m. elevation, and the latter from seed collected at Ta Ngaw, near Chumpawn in Surat circle by Dr. Kerr. Both species belong to the group where a short stem—here about 1–2 cm. high— is developed, and where the opposite leaves are sub-equal. The flowers, with pinkish corolla and yellow anthers, are quite attractive, but although borne profusely they drop rather easily. The foliage, however, renders both plants quite attractive. In S. deflexa the leaves, usually lanceolate, are green, with the veins red. In S. fusca the sub-oblong leaves are almost bronzy above, with the midrib and nerves and a small tract on either side of them whitish or pale, bright green; the lower surface is red except for the green midrib. In both species there is some range of variation in the intensities of the different shades.

Mention may be made of another species of Sonerila in cultivation here, also from seeds collected in South Siam by Dr. Kerr—S. ciliata, Ridl. This species belongs to a totally different group of the genus, characterised by the development of a distinct erect stem (up to about 15 cm. high), where the leaves are not crowded. This species, recognisable by the quadrangular stem narrowly winged along the angles, shows the same variation in foliage as is found in several other species of the genus. From the one collection of seeds we have plants with leaves uniformly green on both surfaces, others with silvery circular areas on the upper surface of the leaf, and others with the upper surface green and unspotted and the lower surface purple.

Chirita involucrata and C. involucellata.

These were both raised from seeds collected by Dr. Kerr in South Siam, the former on Kaw Tao, the latter at Tako. Both plants are annuals, in general habit recalling C. barbata, Sprague, but differing from that species in the type of inflorescence and in the smaller, darker-coloured flowers. In both species the inflorescence is not united with the petiole, but is borne at the apex of short, axillary peduncles, which have two leaf-like bracts at the apex. The two species are very closely allied, differing mainly in the size of the flower—that of B. involucrata being larger than that of B. involucellata. The value to the systematist of having these difficult genera in cultivation cannot be over-estimated. Therein, rather than in their horticultural value, would appear to lie the merit of these two species.

Sonerila deflexa, Craib, sp. nov.

Herba tuberosa, erecta, caule ad 1.5cm. alto primo ferrugineo-squamuloso cito glabro. *Folia* opposita inter se similia, oblongo-lanceolata, ovato-lanceolata, vel rarius subovata, apice subacuta, basi cordata, 2.5–7 cm. longa, 1.8–3.8 cm. lata, sat rigida, nervis exclusis supra viridia, subtus pallide viridia, pagina superiore superne et marginem versus setulosa, inferiore ad nervos nervulosque et marginem versus parce setulosa, utraque medio inferne glabra, nervis lateralibus utrinque 6–8 supra impressis subtus prominentibus pagina utraque rubris obliquis superioribus intra marginem anastomosantibus, nervulis supra parum impressis viridibus subtus prominulis rubris, margine denticulata, dentibus apiculatis, petiolo 1.5–4.5 cm. longo supra canaliculato glabro rubro-suffuso suffulta. *Cymae* terminales, biflorae, pedunculo erecto 4 cm. longo angulato glabro vel setulis paucis brevibus superne instructo apice bracteis 2 circa 3 mm. longis ornato suffultae; pedicelli circa 5 mm. longi, glabri vel pilis perpaucis glanduloso-capitatis instructi, basi parvi-bracteolati. *Receptaculum* pedicello subaequilongum, 2 mm. diametro, angulatum, pilis paucis glanduloso-capitatis instructum. *Calycis* segmenta 3, lanceolata, acuminata, 2 mm. longa, 1.25 mm. lata, glabra vel dorso pilis perpaucis glanduloso-capitatis instructua. *Petala* 3, oblongo-elliptica, apiculata, 7 mm. longa, 4 mm. lata, intra glabra, extra medio pilis paucis glanduloso-capitatis instructa, aliter glabra. *Stamina* 3, filamentis erectis parum complanatis circa 7 mm. longis glabris, antheris 4 mm. longis basi sagittatis. *Stylus* 8.5 mm. longus, glaber.

Cult. Hort. Bot. Aberd. e tub. in Chantaburi, ad Kao Soi Dao, c. 1,200-1,400 m., a Dr. Kerr lectis (*Kerr*, 9669).

Sonerila fusca, Craib, sp. nov.

Herba tuberosa, erecta, parce ramosa, inflorescentia inclùsa ad 12 cm. alta, caule 1-2 cm. alto, ramulis axillaribus brevibus 4-angulatis vel subalatis ad angulos pilis longiusculis sat rigidis albis instructis. *Folia* opposita inter se aequalia, suboblonga, rarius elliptica vel ovato-lanceolata, haud rarius inaequilateralia, apice obtusa, basi cordata vel rotundata, usque ad 10 cm. longa et 6 cm. lata, supra ad costam et minus conspicue ad nervos viridia vel subalbida aliter fusca, subtus rubra, ad costam viridia, supra pilis erectis albidis rigidiusculis subsparse instructa, subtus ad costam nervos nervulosque similiter sed sparsius instructa, nervis lateralibus utrinque 5 obliquis supra impressis subtus prominentibus, nervulis supra parum impressis subtus prominulis, margine denticulata, petiolo 1–3 cm. longo supra complanato subglabro aliter pilis albis rigidiusculis longiusculis subsparse instructo suffulta. *Cymae* et axillares et ramulos breves axillares terminantes, ad 10-florae, pedunculo communi ad 8.5 cm. longo inferne plus minusve aequaliter superne complanato inaequaliter 4-angulato vel subalato pilis iis ramulorum similibus instructo suffultae; pedicelli ad 3 mm. longi, glabri vel plus minusve setulosi; bracteae parvae. *Receptaculum* setosum vel fere omnino glabrum, circa 5 mm. longum, obtuse angulatum. *Calycis* dentes deltoidei, subacuti, 1.25 mm. longi. *Petala* 3, subrosea, oblongo-oblanceolata vel suboblonga, longius acute acuminata, circa 10 mm. longa et 5 mm. lata, supra glabra, subtus medio plus minusve setosa. *Stamina* 3, glabra, filamentis inferne complanatis subroseis superne teretibus pallidis 6 mm. longis, antheris luteis 6 mm. longis. *Discus* membranaceus, 1 mm. altus. *Stylus* obliquus, glaber, 1 cm. longus.

Cult. Hort. Bot. Aberd. e seminibus in Surat, ad Ta Ngaw, prope Chumpawn a Dr. Kerr lectis.

Chirita involucellata, Craib, sp. nov.

Herba annua, erecta, ad 45 cm. alta, e basi ramosa; caulis ramulique virides, hic et illic rubro-suffusi, nitidi, parce pubescentes, basi ad 7 mm. diametro. *Folia* opposita, elliptica, ovata, vel oblongo-ovata, apice subacuta vel obtusa, basi rotundata vel truncata, interdum subcordata, saepe parum inaequilateralia, ad 6 cm. longa et 4.5 cm. lata, rigide submembranacea, supra viridia, pilis erectis longioribus et brevioribus instructa, subtus pallide viridia, ad costam nervosque laterales pilis paucis erectis instructa, costa supra conspicua vel parum impressa subtus prominente, nervis lateralibus utrinque saepissime 7 subtus prominentibus, margine ciliata, irregulariter dentata, petiolo 1.5-9 cm. longo supra canaliculato pilis sparsis erectis instructo suffulta. *Cymae* pauciflorae, ramulis lateralibus apices versus caulium et ramorum positis ad 5 mm. longis apice bracteis duabus foliaceis circa 8 mm. longis sessilibus instructis gestae; pedicelli 7 mm. longi, pilis paucis glanduloso-capitatis instructi. *Sepala* viridia, erecta, lineari-lanceolata, subacuta, circa 6 mm. longa, dorso pilis paucis glanduloso-capitatis instructa. *Corolla* antice 1.7 cm., postice 1.3 cm. longa; tubus extra glanduloso-pubescens, parte basali aequali circa 7 mm. longa, superne antice ampliatus, lateraliter compressus; limbus 5-lobatus, lobo antico oblato 2.5 mm. longo fere 5 mm. lato lateralibus paulo maiore, posticis 3 mm. longis 3.5 mm. latis omnibus pallide azureis. *Stamina* 2, filamentis glabris circa 3 mm. longis 7 mm. supra corollae tubi basem insertis, antheris pauci-pilosis, staminodiis lateralibus 2 mm. longis glabris. *Ovarium* 6.5 mm. longum, glabrum, viride, basi disco parvo cinctum, stylo pallido puberulo, stigmate conspicue papilloso 2-lobato.

Cult. Hort. Bot. Aberd. e seminibus ad Tako a Dr. Kerr lectis.

Chirita involucrata, Craib, sp. nov.

Herba annua; caules erecti, ad 45 cm. alti, simplices vel inferne plus minusve ramosi, virides vel hic et illic parum rubro-suffusi, parce pubescentes, basi ad 8 mm. diametro. *Folia* opposita, paribus interse subaequalibus, ovata vel subquadrata, apice acuta vel subacuminata, basi truncata vel rotundata, interdum subcordata, saepe parum inaequilateralia, usque ad 7 cm. longa et 6.5 cm. lata, submembranacea, supra viridia, pilis erectis longioribus et brevioribus instructa, subtus pallide viridia, ad costam nervosque laterales et sparsius marginem versus pilis erectis subsparse instructa, costa supra conspicua vel plus minusve immersa subtus prominente, nervis lateralibus utrinque saepissime 7 supra conspicuis vel subimpressis subtus prominentibus, nervis transversis pagina utraque obscuris, margine obscure denticulata, ciliata, petiolo 2-6.5 cm. longo supra canaliculato indumento ei caulium simili instructo suffulta. *Cymae* saepissime 5-florae, ramulis lateralibus apices versus caulium vel ramorum positis ad 2.5 cm. longis pilis paucis erectis instructis apice bracteis duabus foliaceis ad 1 cm. longis et 1.1 cm. latis sessilibus instructis gestae; pedicelli ad 2.5 cm. longi, pilis glanduloso-capitatis parce instructi. *Sepala* lanceolata, subacuta, erecta, inter se subaequalia, 7 mm. longa, 1.5 mm. lata, dorso pilis paucis glanduloso-capitatis instructa, pallide viridia. *Corolla* antice 2 cm., postice 1.5 cm. longa; tubus extra parce glanduloso-pubescens, intra glaber parte basali aequali vix 1 cm. longa, superne antice inflatus, parum lateraliter compressus, basi pallidus, superne purpureo-ruber; limbus azureus, patulus, 5-lobatus, lobo antico 4 mm. longo 7 mm. lato apice truncato breviter acuminato, lateralibus paulo maiore, posticis circa 3 mm. longis et 4 mm. latis. *Stamina* 2, filamentis pallidis glabris 4 mm. longis circa 1 cm. supra corollae tubi basem insertis antheris luteis inter se leviter cohaerentibus 1.75 mm. longis parce pilosis, staminodiis lateralibus fere 3 mm. longis apice pilosis aliter glabris. *Ovarium* viride, 8 mm. longum, glabrum, basi disco parvo cinctum, stylo pallido inferne glabro superne breviter pubescente, stigmate conspicue papilloso distincte 2-lobato.

Cult. Hort. Bot. Aberd. e seminibus ad Kaw Tao a Dr. Kerr lectis (*Kerr*, 11,172). *W. G. Craib, Aberdeen University.*

COLCHICUM LUTEUM.

From bulbs received in December last from Kashmir I have had the pleasure for the first time of seeing this species in flower. It has always been rare in cultivation and has not found its way into trade bulb lists.

One of its chief claims to distinction is that it is the only species known having yellow flowers. It is figured in the *Bot. Mag.*, t. 6,153; the description is by Hooker, and we are informed it is found in Hazara, Beluchistan, Kashmir, Afghanistan and Turkestan. There may be several forms of this species, as the flowering period is given from December to June.

The plant figured in the *Bot. Mag.* is much more robust and strong than any in my pan of bulbs exhibited at Westminster on February 14; this may be due to the Kashmir variety being smaller or to superior cultivation.

It is also figured by Coventry in his *Wild Flowers of Kashmir*, Series 1, t. 101, where the flowering period is given as February to March. It is one of the earliest flowers to appear near Srinagar, where it is abundant.

Mr. A. E. Bowles, in *A Handbook of Crocus and Colchicum for Gardeners*, states that in his garden both flowers and leaves are devoured by slugs so soon as they appear above ground, but that it grows and thrives in Mrs. Ransome's garden at Ipswich.

There seems little doubt that if it were obtainable in quantity C. luteum would succeed along with the choice Crocuses on the rockery and would always be an interesting and desirable plant to pot up for the alpine house. The colour is a bright and cheerful shade of yellow, the flowers appearing before the leaves. *T. Hay.*

[We learn that Colchicum luteum was granted an Award of Merit by the R.H.S. on Feb. 14, but when our representatives saw Mr. Hay's specimens, on the New Plant table, there was nothing to indicate that such an award had been made.—Eds.].

NOTICES OF BOOKS.

Wild Flowers of Kashmir.

The wheel of time has brought Kashmir plants into the limelight again, and the second volume of Mr. B. O. Coventry's standard work* on the subject follows hard on Father Blatter's enumeration of some Kashmir plants which was recently noticed in our columns. The author of the book under notice needs no introduction to those interested in the flora of Kashmir, for his first volume will be on their shelves. It is sufficient to say that in this further contribution to the subject there is the meticulous precision to be expected from the author in his descriptions of plants, of which the majority are old friends. Interest is added to the necessarily dry technical descriptions of plants by an explanation of the derivation of the generic and specific names, as, for example, in the case of Picrorhiza kurroa, where the generic name is explained as from the Greek *pikros*, bitter, and *rhiza*, a root. The specific name is from "Karu," the Punjabi name for the plant, which also means bitter, the same name being applied to Gentiana Kurroo. Where plants have actual or traditional uses, they are set out, as in that astonishingly "cobwebby" alpine, Saussurea sacra, whereof the root is esteemed by the Yogis, or holy men, for its medicinal properties. A decoction of the root in milk is said to be a cure for snake-bite and various ailments, and tradition ordains that one person may not collect more than seven plants, the taking of a greater number involving sudden death.

Much care has been given to the illustrations with which the book is liberally provided, and they take the comparatively novel form of reproductions of direct colour photographs. Within the limitations imposed on technical work of this character these reproductions are of a high order, and the presentation of the plants to the camera is unusually well-done, much care having been devoted to the arrangement of habit, flower, leaf, and in many cases, root development as well. There are especially excellent photographs of Corydalis cashmiriana and Campanula cashmiriana, for instance, of Fritillaria Roylei and three of the Gentian genus—G. Moorcroftiana, G. decumbens and the famous if elusive G. Kurroo. Plate XLIII, of Eritrichium strictum, will whet the appetite of many keen cultivators, but in this country it must be as much a will-o'-the-wisp as its European cousin, E. nanum. An obvious criticism of the book is its weight, due to the use of heavily-dressed paper for matter as well as illustrations. It is to be hoped that the employment of the paper in question may not render the book less permanent than it deserves to be, but in this damp climate it is a contingency to be remembered by those who shelve it. There is a useful calendar of the months in which the plants dealt with come into flower, and the index is all it should be, except for one error, repeated from the text, *i.e.*, Parrottia for Parrotia.

Mycorrhiza.

Few problems of plant nutrition are of such common interest to botanists and horticulturists as mycorrhiza, that remarkable association of fungus mycelium with roots of higher plants. Closely studied since Frank's famous treatise in 1885, the mycorrhiza problem has during the present century been attacked more particularly from the experimental side, and by this means our views as to the rôle played by these structures have become considerably clearer. A vast but scattered literature on the subject has grown up. Most of this is in German, and though much of the best work is in English, important papers occur also in French and Italian periodicals.

The appearance of a monograph* in the English language is therefore most welcome, especially when it is by a worker who has specialised on the subject for some fifteen years and whose researches have been marked by extreme care and thoroughness. The account in question first appeared as a series of papers in the New Phytologist, but has since been published in book form. The main divisions of the volume are historical, covering three periods of activity, the "modern" period (1900-1925) occupying three-quarters of the whole. The foreign work has been carefully studied and fully summarised, and it may be said at once that as well as providing a comprehensive account from the historical standpoint, the volume is a critical and discriminating treatise, and as such will be of particular value. It is, moreover, well-written, the style being concise, and, so far as the technicalities of the subject will allow, lucid and explicit.

It so happens that the greatest advances in recent knowledge have been in three groups of plants which are of particular interest to horticulturists, namely, the Orchidaceae, Ericaceae and Trees, and on these groups the book supplies valuable chapters. Other interesting chapters are those dealing with tuberisation, the mycorrhiza of Ferns and Mosses, and the physiological and nutrional aspects of the entire subject.

With regard to Orchids, the main outlines of the remarkable phenomena obtaining in Orchid roots are fairly well-known. The difficulty experienced in germinating seedlings was shown by Bernard to be a mycorrhizal problem. The significance of Bernard's work and the use of the "pure culture" method of raising seedlings is familiar to Orchid growers, as is also the more recent work of Knudson, who, in his cultures substituted sugar or plant extracts containing sugar for the fungus. If Knudson's claims are substantiated, the raising of seedling Orchids under glass will be largely revolutionised. The whole of this work is ably and concisely summarised in the chapter on Orchidaceae.

The pages dealing with tree mycorrhiza will be of interest to all concerned in the growing of trees, whether they be in the woodland or in gardens. The most striking results of the last ten years' research have been the synthesis of mycorrhiza in the laboratory, and the experimental confirmation by the Swedish botanist, Elias Melin, of the oft-repeated statement that the fungus partner of the various mycorrhizas of our native woodland trees is one or the other of the common saprophytic toad-stools characteristic of the particular type of woodland. The species of fungi and trees concerned, the methods employed by Melin, and the conditions leading to successful development of mycorrhiza are fully summarised. Melin's work confirms the generally accepted view that the fungus derives benefit from carbohydrates (particularly glucose) supplied by the host, and probably also from phosphatid exudates. With regard to the host plant, there is no suggestion of an obligate infection in the seedling stage as in Calluna, but from the relative ease with which fungi can assimilate complex organic compounds of nitrogen (as compared with roots) it seems clear that the mycorrhiza which develops later must confer great benefit to the trees with which it is associated. Mycorrhizal development is abundant on raw (acid) humus soils where the supply of nitrates is usually meagre, hence its presence on such soils is probably of vital importance to the host. The chapter concludes with some interesting paragraphs on the rôle of mycorrhiza and soil fungi in connection with the deterioration of forest soils.

Interesting as is the section on forest trees, that on Ericaceae summarises an even stranger story. The main discoveries of the structural features of the mycorrhiza in this family have been made by the author herself, and although not yet confirmed by any other investigator, Dr. Rayner's work has been so critically carried out and so repeatedly confirmed that no reasonable doubt can be held as to its accuracy. The chief facts are briefly as follows. In Calluna vulgaris the growth of the fungus mycelium is not confined to the roots but occurs throughout the entire plant, spreading from the shoots into the floral organs and from the wall of the seed-vessel to the outer coat of the young seed. Each seed therefore carries its fragments of fungus mycelium and the infection of the young seedling by its own strain of mycorrhizal fungus is ensured. Such is the story of Calluna: every plant is a dual organism. There is little doubt that a somewhat similar state of affairs exists in other members of the Ericaceae, since the seed vessels of Ledum, Kalmia, Arbutus, Vaccinium, Rhododendron spp. Pieris spp. and Erica spp. have been found by the author to be infected by mycelium.

The fungus in the roots assists the host by drawing upon the organic food locked up in the humus, and the author believes there is good evidence for assuming that this is supplemented by the fixation of atmospheric nitrogen. The mycorrhiza of Ericaceae is thus largely comparable to the root tubercles of Leguminosae and represents an attempt by these plants to obtain the requisite supplies of nitrogen on soils deficient in nitrates. In the words of the author, "They have solved the problem of growth upon the poorest and most unpromising soils, but they have solved it at the price of their independence."

The origin and significance of the mycorrhiza habit as it occurs in all groups of plants is discussed in the last chapter. In Orchids and Heaths it seems clear that the symbiotic habit must have originated by parasitism on the part of certain fungi; in forest trees the fungi concerned are saprophyles which may have benefited by the root exudates. Subsequent adjustments have led to various forms of symbiosis. Dr. Rayner points out the immense importance of the nitrogen supply, and advances the ingenious hypothesis that, in the struggle for existence, the association of fungus and vascular plant may be a manifestation of the urgent need for suitable nitrogenous compounds. In Calluna it is claimed that atmospheric nitrogen is fixed by the fungus. In view of the interest and importance of nitrogen fixation, from a botanical standpoint, it appears to the reviewer that it would be worth while to repeat and elaborate, with the most up-to-date technique, this portion of the research. For an author who has already surmounted such difficulties in experimental work it should not be impossible to place the point beyond criticism.

A full bibliography concludes the work which is, moreover, illustrated by a large number of useful drawings and many excellent photographs. The whole volume is full of interest to the scientifically minded gardener, and its author is to be warmly congratulated. The results of further investigation on this subject, which we understand Dr. Rayner has on hand, will be awaited with interest.

**Wild Flowers of Kashmir* (Series II), by B. O. Coventry, F.C.H., Conservator of Forests. London: Raithby, Lawrence and Co. 1927. 16s.

**Mycorrhiza: An account of non-pathogenic infection by fungi in vascular plants and bryophytes.* By M. C. Rayner, D.Sc. (London). Price 21s. Wheldon and Wesley, Ltd., London, 1927.

REGISTERED PLANT NOVELTIES.

The following plants have been registered with the Fédération Horticole Professionnelle Internationale :—

Begonia Souvenir de Fernand Rigouts.—(B. Lubbersii and B. Rex). The leaves are of medium size, dark green, with silvery spots on the upper surface, and dark red beneath. The coral-red flowers are carried on erect stems. Raiser, M. Albert Rigouts, Meirelbeke, Lez-Gand, Belgium.

Begonia Souvenir de André Rigouts —(B. Lubbersii and B. Rex). Leaves pale green, spotted with silver on the upper surface and coloured green and red on the lower surface. Flowers large and of pink colour. Raised and distributed by M. Albert Rigouts.

Begonia Perle de Gand.—(B. Lubbersii × B. Rex). Leaves of medium size, dark, dull green, with small white spots and brownish-red on the undersides. Flowers large and red. Raised and distributed by M. A. Rigouts.

Gladiolus Dragon Lyonnais.—A large-flowered variety of the Gandavensis type. The blooms have many petals making up an almost double flower. The colour is pink with yellow shading, and some tiny protuberances, some yellow and some green. Raised by M. Pillette, St. Genis-Laval (Rhone). To be distributed by MM. Rivoire pére et fils, 16, rue d'Algérie, Lyon (Rhone).

Aster Madame Rivoire.—A branching variety of the Comet type with large flowers of delicate flesh pink colour. Stems stout ; well adapted for bunching. The raiser of the variety is unknown, but MM. Rivoire are the distributors.

PUBLIC PARKS AND GARDENS.

The Ministry of Health recently held an enquiry into an application by Blackpool Town Council for sanction to borrow sums amounting to £12,865, for laying out three recreation grounds.

Swadlincote Urban District Council proposes to make application for sanction to borrow £2,100, £1,700 and £500 for laying out and equipping recreation grounds at Swadlincote, Newhall and Church Gresley, respectively.

Brighton Town Council has adopted a modified scheme for the improvement of Preston Park, at a cost of £18,500.

Bolton Town Council has completed negotiations for the purchase of Moss Bank, covering an area of about sixty-three acres, for a public park.

FRUIT GARDEN.

EFFECT OF SOIL ON SPUR PRUNING.

That soil has an effect upon the growth of fruit trees is fully recognised. That it has an effect upon the method of spur pruning which should be adopted is not recognised to the same extent.

Spur pruning is carried out for the encouragement of the production of fruit buds on the spurs. If it fails in the production of these, then the method of pruning is at fault.

Of the two systems of spur pruning practised, the long-spur system is suitable where the soil is of such a nature that the two or three buds at the end of any piece of wood which has been cut back are liable to be forced into growth as young shoots.

If the short-spur system is adopted in such a case and only an inch or two of wood is left, with two or, perhaps, three buds on it, these, instead of being converted into fruit buds as desired will produce young shoots leaving no buds lower down the spur for the production of fruit buds. If longer spurs are left—perhaps six or seven inches long with several buds on each—although the two or three buds at the end will produce shoots, those lower down will be transformed into fruit buds, and at a later date the spur may be cut back to the outmost fruit bud without any danger of further shoots being produced.

Where the soil is of such a nature that the production of woody shoots is not encouraged it is not necessary to leave such long spurs. If two or three inches are allowed to remain it is probable that the buds on the spurs will be converted into fruit buds without the formation of the woody shoots previously dealt with.

The length of spur which should be allowed to remain is influenced by the variety of Apple as well as the kind of soil. Certain varieties will throw out shoots with little or no encouragement on the part of the soil. Allington Pippin is a typical example of this type of tree. Except in very special cases, the long-spur system is most suitable when dealing with this variety.

Cox's Orange Pippin, on the other hand, is an opposite type of tree. Soil conditions are not often of such a nature that the production of any quantity of shoots is encouraged. Cox's Orange Pippin must be spur-pruned if fruits of any quantity and quality are to be produced for any length of time, and it is mostly safe to prune this variety on the short-spur system.

Whatever system is adopted, weak, thin shoots about four or five inches in length, should be left untouched by the pruning knife. Such shoots will usually grow into fruit spurs naturally, without any help from the pruning knife. Indeed, the cutting back of such shoots is likely to have exactly the opposite effect to that desired.

The kind of soil is then just as important as is the variety of Apple, when it is a question of long- or short-spur pruning, and to ignore this may be fatal to the fruit-bearing capacity of the tree. *J. W. Morton, March.*

VEGETABLE GARDEN.

BRUSSELS SPROUTS.

Brussels Sprouts are one of the most prized vegetables during autumn and early winter months ; they are in great demand in private gardens, and considerable quantities are also grown for supplying the markets. Fortunately, they are of easy cultivation, and any good garden soil will grow a satisfactory crop. If a choice of soil is possible, then a good, heavy loam, which is of a retentive nature, should be chosen. The site should be an open sunny one, where they may have full advantage of light and air. During autumn or early winter the soil should be deeply trenched and given a heavy application of farmyard manure as the work proceeds, if it is in poor condition. The surface of the soil may be left in as rough a condition as possible during winter ; if of a heavy retentive nature, the system of ridging should be adopted in preference to leaving the surface level. By adopting the former method a much larger surface is exposed to the beneficial effects of the weather. If the land is deficient in lime this material may be applied to the ridges when forking them down in spring, before planting time arrives.

Brussels Sprouts, to secure the best results, should have a long season's growth ; this may be obtained by sowing seeds under glass during late February or early March. So soon as the seedlings are large enough, prick them out into a cold frame, or a prepared bed in a sheltered position in the open. Due attention to watering and shading if the sun is bright, also to protecting at night if there is a likelihood of frost, is essential. When the plants are six to eight inches high and have been thoroughly hardened, they may be transferred to their permanent quarters. The site they are to occupy should be well-forked, and, if of a loose, open texture, made firm by treading. The best results are secured from moderately firm ground.

When planting, endeavour to lift each plant with a ball of soil attached to its roots; for this purpose a trowel should be used. Water each one immediately after planting, unless the weather is showery. As Brussels Sprouts carry a considerable amount of foliage during the growing season, they require three feet between the rows, and two to two-and-a-half feet between the plants. During summer the ground should be kept clean by frequent hoeing ; this will also help to retain moisture during dry periods. Should long periods of dry weather continue, they will be greatly benefited by a light mulching, and watering with clear water ; if exhibition Brussels Sprouts are required, this may be followed by watering with liquid manure, or by light applications of an approved fertiliser. A sowing might also be made in the open, during April, to provide a successional supply for winter use. The resulting seedlings may be planted a little closer in the lines than the earlier ones.

The choice of varieties is an important matter, as a poor variety occupies just so much ground as a good one. Dalkeith and Holborn Exhibition, amongst the tall varieties, are to be recommended, and in the dwarf section, which is probably the most useful when first-class specimens are in demand and space is limited, good strains of Dwarf Gem and King of the Market are difficult to surpass. *R. F., Wisley.*

MAIZE.

I can endorse what Mr. Findlay wrote in your issue of February 11 with regard to Maize. At the same time, when Zea Mays is used as a vegetable for human consumption, it is better called Sweet Corn. Mr. Findlay mentions a number of well-known American varieties and the point to be emphasized is that in this country it is essential to secure seeds of a variety which matures rapidly and is early. Seeds sown in pots in May result in plants that come into fruit at the end of July, but I prefer to sow in the open in June to obtain good cobs by September. To make sure that one is sowing the right thing and not the fodder crop, examine the seeds—which should be wrinkled and translucent, not round and opaque

As the Creoles say, "There is always something to learn both in the kitchen and in the garden," and I believe the young cobs are cooked best by plunging them into boiling water and letting them boil for two or three minutes ; during this process the inner, wrapping leaves should be left round the cob, and removed just before the cob is served. The best way to eat this vegetable is "corn on the cob" ; a skewer is pushed into the heart of the cob and serves as a handle for the cob when it is dipped in melted butter. In Germany, the favourite use of Sweet Corn is as green-corn soup. The Maryland dishes, eggs with Sweet Corn and fried chicken with Sweet Corn, are famous all over the world, and the Creoles make endless biscuits, cakes and puddings from the grains. *William Lawrence, Burford.*

TARRAGON.

A member of the Natural Order Compositae, so rich in herbs, Tarragon (Artemisia Dracunculus) is in constant demand as a herb in all our larger establishments because of the delicate, aromatic properties of its leaves, which are used in seasoning soups, salads, etc. On the Continent it is much more used than in this country, and *vinaigre d'estragon* is a common condiment used extensively by all classes.

It is a native of southern Europe, and although a perennial, it is not perfectly hardy in this country under all conditions ; many growers, particularly those with heavy soils, experience difficulty in wintering it outside.

The plant succeeds best on a light, warm soil, but even then it is advisable to protect it during periods of intensive frost Although the Tarragon plant flowers frequently, it seldom produces seeds, and propagation is generally effected by vegetative methods.

Stocks may be increased readily by division of the roots during early spring, and cuttings may be rooted in heat so soon as growth has commenced in the spring, or later in the summer under a bell-glass outside. Supplies of green leaves, for winter use, may be obtained by lifting a few roots and placing them in gentle heat, when they will grow so freely as Mint. *A. P. C.*

HOME CORRESPONDENCE.

[*The Editors do not hold themselves responsible for the opinions expressed by correspondents*].

Forced Rhubarb.—With reference to Mr. Auton's note in *The Gardeners' Chronicle* of January 28, on the Forcing of Rhubarb, I would like to comment on some of his remarks and suggestions. Firstly, he is quite correct in stating that there is no need to force Rhubarb in darkness. Such forcing may lengthen the stalks a little, but at the same time it is apt to lessen their thickness. There is also a loss of starch by forcing in darkness. Plants make starch by photosynthesis during daylight only; therefore if no light is allowed to enter the forcing house or pit, the Rhubarb so produced will be starch-free. As starch imparts flavour, in growing starch-free Rhubarb loss of flavour is incurred. Mr. Auton refers to the readiness with which people buy the blanched Rhubarb in preference to the shorter, sturdier stalks, which have been grown in daylight. This may be so, but surely we need not sacrifice quality and quantity for appearance. Thick, richly-flavoured Rhubarb is readily obtained by digging up fifty crowns at a time and allowing them to lie in the open for about a week, so as to be retarded by frosts. These should then be planted on a deep hot-bed, in frames which are about five feet deep at the front. Plant the first batch during the first week of November, and have other crowns in readiness to be put in every fortnight. The number of crowns planted will be, of course, in proportion to the number available. By covering with straw litter until the first signs of the young stalks appear, an appreciable quantity may be obtained by Christmas. *Jack Hardy, Durham.*

Ornamental Currants. — In his list of ornamental Currants (pp. 78-9), in your issue of February 4, *N. Wales* should, I think, have included Ribes laurifolium; this Chinese introduction has the merit of bearing white flowers in January which will withstand very hard frosts without injury. Being of low habit and slow growth it is eminently suited to the rock garden. The leaves are evergreen, and the twigs short and stout; when out of flower it is impossible for anyone to recognise it as a member of the Currant family. *Vicary Gibbs, Aldenham.*

Rooting Zonal Pelargoniums.—I imagine your correspondent who deals with this subject on page 78 writes from the U.S.A., but I would like to state that the method of rooting these Pelargoniums in pure sand applies also to this country. I have at the present time some well-rooted cuttings of winter-flowering Pelargoniums rooted in sand. They were inserted early in the year. Last May I rooted some in a similar manner, the time being, of course, late, but I was glad to get a stock of the varieties so treated. They flowered so well as could be expected from late-rooted stock. I have not yet tried rooting bedding Pelargoniums in the autumn in this way, but have done so with Paul Crampel in the spring, and have had the cuttings rooted in a fortnight. As Mr. Craig remarks, these Pelargoniums are best rooted in open conditions, and there is no necessity to dry them before insertion. The cuttings of Ivy-leaved Pelargoniums root even more readily than the Zonal varieties when inserted in pots or boxes of sand. *William F. Rowles.*

Birds and Fruit.—I purposely refrained from extending my former letter to the economic question, thinking that someone else might deal with it. It will be admitted that here we have a great number of small birds of alleged utility, and that on the other side of the Channel through abundance of magpies, jays and other agencies, these small birds are few or even very few. Notwithstanding, the growers there are able to raise so much in the way of small fruit, Plums, etc., that they are able to supply their home markets and yet have many tons available for exportation, with which they can undersell our growers in our markets. Can these birds be very important after all? And have we surplus fruit to export? Mr. Nicholson calls upon me for reply; may I respond by asking if he can vouchsafe that none of his trees are now harbouring aphis or sucker eggs? If not, the matter comes near the old proverb: "Those who live in glasshouses should draw down the blinds!" If he can, I will admit that there are probably more sucker eggs altogether upon my smaller trees than upon the old one. Last year they were dosed with di-nitro-ortho-cresol as prescribed, but the amount of egg-killing was paltry; this year, they have had a tar-distillate wash, and so far the eggs look very healthy; in previous years, so far as concerns eggs, the tits have had full scope, unless lime-sulphur puts them off so high as it could be applied. In regard to woolly aphis, I sometimes wonder whether the "clearance by birds" is more or less coincident with the earthward migration of numbers of the insect? May I also ask Mr. Nicholson to name the plenty of sorts of Pears other than Comice which are just as good, and which are not attacked by tits, etc.? At the same time, he might add a few names of similarly resistant Apples. I have a fair number of varieties, from Vicar of Winkfield to Olivier de Serres, but none immune in this respect. Modern dietetics states that raw fruit is a necessity, not a luxury! *H. E. Durham.*

Pralinage.—The practice of coating the roots of plants with a mud of fine earth and cow-dung —we use fine earth only or that mixed with some old rotted stuff—known as *pralinage* by the French, is by no means confined to the planting of shrubs and trees. It may be used in planting almost anything, and is especially useful and beneficial when seedlings of the Cabbage and Broccoli tribe are being placed in their permanent places, and the weather is hot and dry; then it is almost indispensable for their quick recovery from the removal. As an adjuvant, we also remove a few of the lower leaves, so as to reduce the evaporation until the new rootlets have established themselves; this not only with Cabbages but also with Lettuces. The pinching off of the tops of Onions and Leeks is to some extent in the same category; with these it has the further advantage of preventing the toils of the earthworm; where not done, I have seen the withered plants dragged out quite a distance by this agency, and the roots exposed to the four winds of heaven. As Miss Slade outlines, the derivation of the term is alleged to have come from Praslin, the major-domo (*sommellier*) of Maréchal Duplessis. *H. E. D.*

Plant Tonics.—The note on Plant Tonics by your correspondent, *Victoria Slade*, p. 87, opens up an intensely interesting subject in the field of artificial manures about which we English gardeners admittedly do not know everything. But I am very doubtful of the ability of the French gardener or French literature to teach us much about soil chemistry and plant nutrition, and in this direction there exists no striking difference between English and French methods. With regard to iron and magnesium, all English gardeners realise that they are necessary plant foods, and no English horticultural work dealing with plant nutrition fails to emphasise the fact that these two elements are among the fourteen known to be essential to plant life. Further, sulphate of iron and sulphate of magnesium are so commonly used in this country as are their French equivalents, *sulfate de fer* and *sulfate de magnésium* in France, and find a place in the lists of most firms who deal in artificial manures. If it is not usual to add iron to the soil in this country it is because most of our soils contain an adequate amount of this element, but even then, English gardeners, knowing the subtlety of plant nutrition, and the possibility of iron being present yet not available, sometimes add iron by way of a possible tonic. It may be of interest to your correspondent to know that much of our so-called irreclaimable land is "bad" because it contains iron in a toxic form. For example, some yellow clays contain an oxide of iron—ferrous oxide—which, if present in large quantities, is very injurious to plants. When exposed to the atmosphere, however, more oxygen is absorbed, and it becomes ferric oxide, in which form it is a valuable plant food. It is obvious that in such a case it would be useless to apply artificial manures or patent plant foods as a remedy, and that physical culture to facilitate the absorption of oxygen is the tonic needed. *W. Auton.*

Plant Diseases in Scottish Gardens.—In *The Gardeners' Chronicle* of February 4 (p. 74), there is a statement that, following a proposal made by me at the last Annual Meeting of the Royal Caledonian Horticultural Society, a deputation of the Council laid before the heads of the Board of Agriculture certain proposals regarding the control of insect pests and diseases in Scottish gardens. This statement is not, however, in accordance with the facts, and I now desire to place the matter in its true perspective. The question of plant pest suppression had its origin in a paper read before a meeting of the Society by Mr. Alexander M'Callum, M.A., L.L.B., of the Board of Agriculture for Scotland, on April 3, 1923. Mr. M'Callum referred to what was being done under the scheme of Research Institutions originated by the Development Commissioners in 1911, and to the fact that all the work which had a special bearing on horticulture was being done in England by the aid of grants from Government funds, and to the public interest which was being taken in horticultural scientific work in England, and he asked the question, "Why have we not put forward a case for some work in horticulture in Scotland?" Soon afterwards the question of doing something to combat insect and fungus pests was taken up with the Board of Agriculture by the Society, and a Committee of the Council, of which I was then a member, formulated a scheme for the purpose. Put shortly, the scheme, which *inter alia*, involved the appointment of a mycologist, an entomologist, a chemist and a practical gardener, was accepted by the Board. At the Annual Meeting of the Society in 1925—by which time I had left the Council—it was reported that a mycologist had been appointed, as part of the scheme, by the Board of Agriculture, but there, so far, the matter rests. At the Annual Meeting in 1926 I moved that the Council take up the matter afresh with the Board with a view to having the scheme completed, but, although most of the members of the Council who had taken part in formulating the scheme in 1923 were present, no one in the large meeting would second the motion. At the following Annual Meeting, in January, 1927, I again moved the same motion, and, strange to say, it was unanimously accepted. In March following, a meeting was held with representatives of the Board, but, except that the Board suggested the formation of an Advisory Committee, there was no further development, and nothing more is likely to be done on the lines suggested by the Society. As a member of the Committee of the Council which had charge of the matter, I was present at this meeting, and so far as I know this was the last interview it had with the Board. As to the Advisory Committee, I regard this merely as casting something to the wolves on the part of the Board of Agriculture, and I am not in the least sanguine of anything of consequence being evolved by it as regards the compulsory suppression of pests and diseases. Mr. R. L. Scarlett, who is a member of the Advisory Committee, stated at the last Annual Meeting of the Society that "the official attitude was that anything of a compulsory nature would require serious consideration, because once compulsory measures were introduced, no one knew how far they might go." But without compulsion little or no progress will be made with, for example, the extermination of such insect pests as Big Bud of the Black Currant, or Reversion, both of which are causing incalculable loss to the country annually. But is there not already compulsion? What about Foot and Mouth disease of stock, and Black Wart Disease of Potatos? It is all very well to investigate diseases of bulbs, but these are not food plants, and if the Board is in earnest, its first consideration should be the making the most of our food resources. *A. D. Richardson, Edinburgh.*

SOCIETIES.

LEICESTER AND LEICESTERSHIRE CHRYSANTHEMUM AND FRUIT.

The annual meeting of this Society was held at Leicester on February 2. Mr. J. H. Goddard (President) occupied the chair. After offering congratulations on the splendid gathering, the annual report was read by Mr. W. H. Bryant, Hon. Secretary.

Mr. Bryant reported that the 1927 show was probably the best ever held in the thirty-five years' existence of the Society. Every corner of the large hall was filled with exhibits, and the attendances, in spite of two wretchedly wet evenings, were splendid. The "Mark Firth" Open Cup for eight vases of blooms had now been won outright. This Cup had been in competition for twenty-four years, and they congratulated their President on being the winner. The "Gibbons" Amateur Cup had also been won outright by Mr. F. C. Weston. At the opening of the show the President appealed for Cups to replace these, and in thirty minutes three were promised. During the summer they had two outings: one on the invitation of Colonel Gretton, M.P., to Stapleford Park, when the Colonel entertained the company to tea; and the other to Rothley, where the President entertained the Society to a tea and whist drive. About sixty members attended on each occasion.

The Hon. Treasurer, Mr. George Underwood, reported that the financial affairs of the Society were in a flourishing condition. The ladies' committee had again worked splendidly, producing £35. The Society had now about five hundred subscribers. The profit for the year was £54, and of this £50 was added to reserve and invested.

Mr. Goddard, in moving the adoption of the report, congratulated the Society on its excellent season's work. He had attended all but one of the Committee meetings, and he assured the members present that they had splendid officers in their Hon. Secretary and Treasurer, and a Committee second to none in the country. Out of a committee of twenty-four the average attendance was twenty-one. Referring to next season's programme, he reported that all "open to Leicestershire" classes would become open to the country, and would probably bring the severe competition they had been courting. A large addition had been made to the prize money, and it was intended to make the exhibition the next best to the "National."

The reports were unanimously adopted, and all officers were re-elected.

CARDIFF AND DISTRICT GARDENERS'.

The Annual Dinner and Social evening n connection with the above Association was held recently at the Queen's Hotel, Cardiff, Douglas Cory, Esq., presided over a large gathering and a very enjoyable evening was spent. An excellent dinner was followed by a selection of songs and music.

A well-attended meeting of this Association was held a week later at the Queen's Hotel, when Mr. W. Bennett occupied the chair. All were interested in the lecture given by Mr. H. R. Farmer, of the Cardiff Castle Gardens, on "Points in Judging." The lecturer, who is widely known as one of the most proficient judges in Wales and the west of England, emphasized the fact that quality should always come before size in the exhibition of fruit, flowers and vegetables, although allowances in this respect might be made in such cases as Muscat and Black Hamburg Grapes and Peaches, Mr. Farmer maintained that his greatest difficulty when judging was when dealing with Brassicas; and that no rule may be laid down in judging table decorations. The discussion that followed was opened by Mr. W. Webber, who dealt with the exhibition of Chrysanthemums. Mr. M. Toye spoke of the difficulties that arose when judging table decorations, and Mr. Fry gave some interesting details of the culinary qualities of exhibition Potatos. At the close of this interesting discussion, Mr. Cossam proposed a vote of thanks to Mr. Farmer.

READING AND DISTRICT GARDENERS'.

The fortnightly meeting of this Association held recently in the Abbey Hall proved quite an interesting one, as the whole of the proceedings were sustained by "young" members of the Association.

There was a large attendance, presided over by the President, Mr. Frank E. Moring, and the proceedings commenced with the reading of the first and second prize-winning papers in the competition for the best essays on "The Cropping of the Vegetable Garden throughout the Year." Mr. C. Ibbett, University Gardens, Shinfield, was awarded the first prize, and Mr. R. G. Taylor, Highgrove Street, Reading, the second.

Then followed papers written by Mr. W. G. Fry, University Gardens, Shinfield, on "Cool Orchids," and by Mr. C. Ibbett, on "Bush Fruits."

In the competition for six sticks of Rhubarb, the prizes were awarded as follow:—First prize to Mr. A. H. Dow, The Gardens, Suthamstead House; second prize to Mr. H. Goodchild, The Gardens, Queen Anne's School, Caversham; and third prize to Mr. H. Wynn, The Gardens, Woodcote House.

Mr. W. Broomfield, The Gardens, Cliffe House, Mapledurham, staged some fine blooms of several species of Orchids grown in a cool house, which served to demonstrate the lecture on this subject.

GUILDFORD AND DISTRICT GARDENERS.'

The Annual meeting was held under the Presidency of Alderman F. F. Smallpeice. Apart from members of the Committee, the meeting was not largely attended. The work of the Society is centred in the annual exhibition, which formed the main theme of the Committee's annual report presented by Mr. Walter Miles, the Hon. Secretary. The show held last November constituted almost a record in entries, while some of the exhibits exceeded those of the previous year in the standard of quality. Thanks were accorded to all who had helped to make the exhibition a success, and the report concluded with the assurance that the Committee would welcome new members and subscribers. A satisfactory Statement of Accounts was presented by the Treasurer, Alderman W. T. Patrick, J.P.; this showed a balance brought forward from 1926 of £24 4s. 1d.; Donations, £65 6s. 6d.; Show and incidental receipts, £97 7s. 7d.; total, £186 18s. 2d. Total expenses £152 10s. 2d., leaving a balance of £34 8s. 0d. to carry forward.

The Officers were re-elected:—Alderman F. F. Smallpeice, President; Alderman W. T. Patrick, Hon. Treasurer; and Mr. Walter Miles, Hon. Secretary. Mr. T. Newman (Tangley Place) was elected to the Committee in place of Mr. C. Hebbourn who has removed from the district; the remaining members, Mr. W. F. Binfield, Mr. W. Bullen, Mr. H. J. Blunden, Mr. H. Cook, Mr. A. J. Joy, Mr. J. A. Kirkwood, Mr. A. Lampard, Mr. A. Mitchelson, Mr. F. Oyler, Mr. J. Powley, Mr. R. Souter, Mr. H. Stent, Mr. G. C. Wareham, Mr. G. Williams, Mr. O. Wells and Mr. J. H. Willby were re-elected, with Mr. F. W. Westlake as Chairman.

GLASGOW AND WEST OF SCOTLAND.

At a recent meeting of this Society the President, Mr. Joseph Dobson, occupied the chair, and Mr. John Hill, of Rosemount Gardens, Monkton, read a paper entitled, "The Amateur's Rock Garden."

He expressed the opinion that the present interest in alpine plants would continue, and suggested that they might be given better conditions than those usually afforded them by amateurs. He advised those contemplating the construction of alpine gardens to exercise originality with regard to design and the selection of the occupants. Rock gardens should not be mere replicas of those seen elsewhere.

Mr. Hill suggested that the best stone for the purpose was red or white sandstone, or limestone, and reminded the meeting that the stone is used primarily to provide conditions necessary to the successful culture of alpine plants.

His instructions with regard to the use of the rock and the construction of the rock gardens were lucid and interesting. He dealt with the construction of special positions required by rare and difficult plants that resent surface dampness of the soil and foliage, and emphasised the desirability of sunshine for the majority of alpine plants. The plants most suitable for the amateur were described by the lecturer, and instructions were given for their culture; he also discussed the subject of their propagation.

At the close of the meeting, Mr. Hill, on the motion of the Chairman, was warmly thanked for his interesting and highly instructive paper.

EDINBURGH AND EAST OF SCOTLAND POTATO TRADE.

The annual dinner for members of this Association was held in the North British Station Hotel, Edinburgh, on February 8, when Mr. T. A. Scarlett, J.P., presided over a large company, that included Lord St. Vigeans, and Messrs. G. Mercer, J. Wood, W. Cuthbertson, W. Fife, J. McRobie, M. Laggan, J. Thomson, D. Cuthbertson, T. Elder, W. J. Campbell and A. B. Fulton.

In proposing the toast of The King, Lord St. Vigeans said that the Association, which aims at the successful cultivation and the business-like distribution of Potatos, was doing important work in the interest of the community at large, so well as for those directly connected with the production of this staple food; and spoke of work that had been done towards discovering the ideal immune Potato, and of the necessity for this work.

In his reply, the Chairman said it was quite true that Potato producers led an arduous life, and that the returns for their labours were small. He spoke of the value of the Potato crop in times of national stress as, for instance, during the Great War, and proceeded to speak of the market values of various varieties, especially that of Golden Wonder.

The toast of "The Potato Grower" was proposed by Mr. Campbell, who criticised the increasing importation of foreign Potatos, and suggested that home-grown produce should receive preference in the markets. He stated that the most successful growers were those who produced early Potatos, for the risks of losing the crops through disease were minimised by their early removal from the soil. Mr. Campbell remarked that the methods of marketing seed Potatos had improved during recent years, but that there was still room for improvement in cultural methods; he emphasised the necessity for grading.

Mr. Mercer, when replying to this toast, stated that he did not agree with Mr. Campbell's statements in connection with the handling of seed Potatos, and that he considered that there was still room for improvement.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

The February meeting of this Society was held at the R.H.S. Hall on the 13th inst., Mr. Charles H. Curtis presiding. Seven new members were elected. Two members withdrew interest which amounted to £7 6s. 10d., and two members over seventy years of age withdrew £100 15s. 7d. from their deposit accounts.

The Death certificates of four deceased members were received, and the sum of £97 11s. 10d., plus £70 Funeral Benefits, was paid to their respective nominees. The Sick-pay for the month amounted to £102 3s. 10d. on the Private side, and on the State Section to £75 3s. 0d.; Maternity claims came to £5. Grants from the State Section, amounting to £51 5s. 0d. were made to twelve members for dental and optical treatment, and fifteen other cases were considered. The draft of the Annual Report was submitted and approved for presentation to the Annual Meeting on March 12,

ROYAL GARDENERS' ORPHAN FUND.

There was an unusually large attendance at the Annual Meeting of subscribers and friends of this charity, held at Simpson's, Strand, on Wednesday, February 15. Mr. David Ingamells, Chairman of Committee, presided, and those present included Mr. George Monro, Mr. P. R. Barr, Mr. J. F. McLeod, Mr. J. E. Dixon, Mr. J. Cull, Mr. A. Dawkins, Mr. C. H. Curtis, Mr. J. Wort, Mr. W. Rowe, Mr. W. Howe, Mr. J. B. Linford, Mr. A. Metcalfe, Mr. H. Cowley, Mr. R. B. Leech, Mr. J. M. Bridgeford and Mr. D. Swain.

The Report of the Committee for 1927 was read by Mr. A. C. Bartlett, the Secretary. Mr. P. R. Barr, Hon. Auditor, presented the accounts and referred to the several items of expenditure, comparing them with corresponding items in the accounts of the previous year.

Extracts from the Report for 1927.

The Committee points out that generous contributions have made it possible to continue the allowances to the children of gardeners and others in allied callings, who have been so unfortunate as to lose their fathers. This continued support has allowed the Committee to extend the weekly allowances beyond the usual period, to several of the children, some of whom have won scholarships at their schools. In these cases the headmasters have given their pupils excellent reports and have expressed definite opinion that the children will derive great advantage from the extended education, which will better equip them for their work later in life. The Committee has been convinced that, in these cases, the widowed mother has made great sacrifices in the endeavour to give her children the best possible start in life, but it has been evident that, without the assistance of the Fund, her hopes and desires could not have been realised. In view of these circumstances and that it should also be to the advantage of the country generally, the Committee feels confident that the policy of further assisting children who show exceptional promise will meet with the approval of every Subscriber and Donor to the Fund, and that they will continue the financial support given so generously in the past.

The possibility of recommending an increase in the amounts of the weekly payments to the orphans has engaged attention, but the Committee regrets that, without a greater income, it is not yet possible to recommend any increase in the allowances.

The total receipts from all sources during the past year, including the balance from 1926, amounted to £3,046 1s. 7d. This sum also includes legacies of £250 from the late Mr. Walter Charles Slocock, of £100 from the late Mrs. M. A. Monro, of £50 from the late Mr. Thomas Manning and £10 from the late Mrs. H. Coutts. The kindly thought and generosity of these donors, who were regular supporters of the Fund, is greatly appreciated. In continuance of its financial policy, the Committee has made a further contribution towards restoring the Invested Funds to their pre-war position.

The Annual Festival Dinner, which was held at The Hotel Victoria last May, was very successful, and the means of very materially increasing the income of the Fund. The Committee offer the Fund's sincere thanks to Sir Henry Whitehead, who so kindly presided and made a generous donation of £100, and to Lady Whitehead, who also honoured the Fund with her presence. George J. Nicholls, Esq., C.C., F.R.C.I., who presided at the previous Dinner and is now one of the Fund's valued Vice-Presidents, also attended and most generously made a second gift of shares in his business, so that, now, the "George J. Nicholls Fund" will provide for two orphans in perpetuity.

The Committee acknowledges with heartiest thanks the valued contributions from the following gardening associations during the past year. The Royal Caledonian Horticultural Society, Altrincham and District Gardeners' Improvement Society, Sandringham Estate Cottage Horticultural Society, Croydon Chrysanthemum Society, Croydon and District Horticultural Mutual Improvement Society, Croydon Horticultural Society, Parkstone Gardeners' Association, Leeds Paxton Society, Isle of Wight Horticultural Society, Wimbledon Gardeners' Mutual Improvement Society, Bradford Paxton Society, Dumfries and District Horticultural Society, Bournemouth and District Gardeners' Mutual Society, Sevenoaks Gardeners' Society, West Kent Chrysanthemum Society, Sutton and District Horticultural Society, Pudsey and District Chrysanthemum Society, and Messrs. Watkins and Simpson's Sports Club. Considerable amounts were also collected by Mr. W. Auton, Pyrford Court Gardens, Woking Mr. T. H. Cook, of the Royal Gardens, Sandringham; *The Gardeners' Chronicle*; Mr. Joseph Lytle, Garden Supplies Co., Liverpool; Mr. T. Pateman, Brocket Hall Gardens, Hatfield; Mr. Wm. Rowe, Squerreys Court Gardens, Westerham; Mr. C. Nippard, Bournemouth; Mr. A. H. Fulker, Reading; Mr. Wm. Austin (of Glasgow), Harrogate; Messrs. Wm. Thomson and Sons, Clovenfords, and the Rev. A. Lowe, Rangemore Vicarage, Burton-on-Trent, chiefly by means of concerts and other entertainments.

The Fund has sustained grevious loss through the death of its Senior Trustee, Sir John T. D. Llewelyn, Bt., V.M.H., and of Mr. W. P. Thomson, who, for many years, was a member of your Committee, regularly attended its meetings, and was untiring in his efforts on behalf of the Fund. Through death, the Fund has lost Mr. Thomas Manning, for many years an Auditor of the Fund, Mr. J. W. Baker, Mr. W. A. Cull, and other valued supporters, and the Committee express their deep sympathy with the relatives. As a Trustee, in place of the late Sir John Llewelyn, the Committee reports that George Monro, Esq., C.B.E., had consented to allow his name to be placed before the annual meeting.

The Members of the Committee who retire by rotation and offer themselves for re-election, are Mr. W. Auton, Mr. George Hewlings Barr, Mr. J. M. Bridgford, Mr. John Cull, Mr. W. F. Giles and Mr. William Howe. For the two vacancies the Committee wish to nominate Mr. Herbert Cowley, Editor of *Gardening Illustrated*, and Mr. William Rose, of Squerreys Gardens, Westerham, Kent

The Chairman moved the adoption of the Report and expressed the hope that those who had so generously assisted the Fund in the past would not relax their efforts. Mr. C. H. Curtis seconded the motion, and asked how soon the Committee hoped to replace the amount of invested funds it had to realize on during the war. Mr. Ingamells said the Committee hoped to bring investments up to their former level during the present year. The Report and Accounts were then accepted.

Sir James Whitehead, who presided over the Festival Dinner in 1927, was elected a Vice-President of the Fund, and Mr. George Monro was unanimously appointed a Trustee to fill the vacancy caused by the death of Sir John T. D. Llewelyn. Mr. Edward Sherwood was thanked for his services and re-elected Treasurer of the Fund. The retiring members of the Committee were unanimously reappointed, and Mr. H. Cowley and Mr. W. Rowe were elected to fill vacancies. The meeting was equally unanimous in re-appointing Mr. R. A. Witty as Auditor and Mr. A. C. Bartlett as Secretary.

Eight candidates for the benefits of the Fund were then elected by resolution, a ballot being unnecessary; these were: Lilian Elizabeth Allan, Edith Harriden, Leonard Henry Harriden, Grace Ellen Sinclair, Olive Sinclair, Dora Thompson, Rachel Thompson and Lucy Georgina Tyler—all girls.

In accordance with notice of motion, Mr. Dixon moved that approved candidates awaiting election be granted a sum not exceeding five shillings per week. The previous regulation permitted grants of 2s. 6d. per week. Mr. Dixon asked permission to vary his motion, substituting 3s. 6d. for 5s.; this was granted, and the motion was seconded. It was agreed that there should be a differentiation between the grants made to successful candidates and those awaiting election, but that grants in aid should be as generous as possible. Mr. C. H. Curtis moved as an amendment that the grants should not exceed 4s. per week, and this was carried.

A vote of thanks to the Chairman, proposed by Mr. H. Owen and seconded by Mr. McLeod, brought the proceedings to a close.

THE ROYAL GARDENERS' ORPHAN FUND.

Cash Statement for the Year ending December 31, 1927.

RECEIPTS.

	£	s.	d.	£	s.	d.
To Subscriptions: General ...	235	18	0			
Local Secretaries ...	33	3	4			
				269	1	4
Donations: General ...	121	15	7			
Local Secretaries ...	13	14	4			
				135	9	11
Proceeds of Annual Festival Dinner				767	3	0
Advertisements in Lists of Subscribers				11	2	6
Dividends on Stock, Interest, etc.				487	0	1
Income Tax returned ...				54	6	9
Legacies, viz.:—						
Mrs. M. A. Monro ...	100	0	0			
Mrs. H. Coutts	10	0	0			
Thomas Manning ...	50	0	0			
Walter Charles Slocock	250	0	0			
				410	0	0
				2,134	3	7
Balance from last Account				911	18	0
				£3,046	1	7

PAYMENTS.

	£	s.	d.	£	s.	d.
By Children's Allowances ...	807	10	0			
Grants in Aid	46	7	6			
Emma Sherwood Memorial	13	0	0			
Maybud Campbell Fund ...	13	0	0			
James Campbell Fund ...	13	0	0			
				892	17	6
Secretary's Salary... ...				200	0	0
Rent, Insurance, Firing, Lighting, etc.	69	5	5			
Printing and Stationery ...	37	5	9			
Printing and Posting List of scribers	47	5	5			
Audit Fee	8	8	0			
Advertising	3	8	0			
Bank Charges	0	0	6			
Postages	15	7	1			
Petty Cash Sundries ...	1	3	11			
				182	4	1
				1,275	1	7
Purchase of £500 5% War Stock, 1929/47				507	12	0
Balances at 31st December, 1927:—						
Cash at Bank	241	14	0*			
Cash on Deposit ...	1,014	0	0			
Cash in hand	7	14	0			
				1,263	8	0
				£3,046	1	7

Having verified the Securities and examined the Books and Vouchers supplied to us, we hereby certify the above Accounts to be correct.

PETER R. BARR,
RICHARD A. WITTY, } *Auditors.*
Incorporated Accountant.

January 26, 1928.

*Of this amount £206 7s. 6d. is required to meet payment of the Children's Allowances, on January 2, 1928.

BRITISH MYCOLOGICAL.

A meeting of the British Mycological Society was held at University College on Saturday, January 21, with the President, Professor Dame Helen Gwynne-Vaughan in the chair. The first paper was by Miss M. Duke on the genera Vermicularia and Colletotrichum. A short historical account of Vermicularia was given and a description of the structure and an indication of how it had been misinterpreted by Fries and other systematists. Most of the detailed work of recent years had led to the transference of different species of the genus to Colletotrichum. A consideration of the application of the name Colletotrichum shows that probably the two genera were founded on the same species and are therefore synonymous. It was suggested that as the species placed in Colletotrichum are much the more numerous, and also as many are well-known pathogens, it would be advisable to conserve this name against the older Vermicularia. A comparison with Volutella shows that the genus is distinct from Colletotrichum.

The second paper was by Dr. E. J. Butler on the morphology of Catenaria in the eggs of liver fluke. The fungus was found by Professor J. Bayley Butler in the ova of the liver fluke of sheep when investigating the conditions governing the survival of the ova when kept in water. It is believed that the source of the parasite is the tap water in which they were kept. The occurrence is of interest as the fungus has been recorded previously only three times. The details of the morphology of the fungus were given and a comparison made with the observations of previous observers. Infection of the ova takes place by zoospores which penetrate, enlarge and form a sub-spherical cyst. A mycelial filament grows with the ovum and develops a series of enlargements which vary considerably in shape. The mycelium between the swellings becomes septate and forms isthmuses. The sporangia develop rhizoids; and zoospores are formed. The whole process from infection to zoospore formation takes not less than four days, but varies considerably.

After lunch, Mr. N. C. Preston described Cercospora leaf spot disease of Turnips. The disease shows as more or less circular, papery, pale brown to dead white spots on both Turnips and Swedes, generally upon the older leaves. The disease appears to be widely distributed in England, Scotland and Wales.

The fungus is found in the parenchymatous tissues of the leaf, and forms knots of hyaline or brown mycelium in the epidermal layers.

The conidiophores arise from colourless hyphae and protrude through the stomata. They are hyaline, simple, fasiculate, upright and more or less flexuose, and generally consist of two or three cells.

The spores, which arise in succession from the apex of the conidiophores, are elongate, blunted, and generally very slightly broader at the basal end, and more or less acuminate at the tip. They are hyaline, straight or curved, and when mature usually three- to four-celled.

Growth in culture is extremely slow, the fungus forming a cushion-like growth consisting of a dense mat of dark, thick-walled and richly septate hyphae extending deep into the agar, and covered above by a thin layer of fine, glistening white mycelium. Cultures obtained from various sources showed considerable difference in the proportion of hyaline to dark mycelium produced. Both the types of mycelium proved very resistant to drying.

Spore formation was observed on thin agar films. After the first primordium is formed the conidiophore continues its growth, the first spore is pushed to one side and a second arises generally very close to it. A bunch of spores at different stages of development may thus be found together on a single conidiophore. In culture the conidiophores very occasionally branch, but this has not been observed in naturally occurring material. Spore germination may occur in from twelve hours to three days at 15° to 18°C. A large proportion of the spores, however, appear to be sterile.

Inoculation experiments on growing plants have so far proved but partially successful.

The general characters of this fungus, with the exception of its dark mycelium, agree closely with those of Cercosporella albo-maculans.

The possibility of this species being identical with Cercospora Bloxami was considered. An examination of the type specimen gave no information. It was described as having multiseptate spores pointed at both ends, therein differing from the above species.

In the shape of its spores the fungus perhaps resembles Cylindrosporium rather than a Cercospora, and it seems probable that this species, Cercosporella albo-maculans, and Cylindrosporium Brassicae may be the same organism.

The last paper, by Mr. J. Ramsbottom, dealt with the nomenclature of fungi. An outline of the history of botanical nomenclature was given, and a correlative account of the different modern codes and suggested alterations in them. The rules and recommendations referring to fungi were commented on. It was decided to hold a symposium at the next meeting of the Society to consider the nomenclature of strains.

The different papers were well discussed, and there were a number of interesting exhibits.

SALISBURY AND DISTRICT GARDENERS.'

The recent evening meeting was devoted to short essays. Mr. Drake, of Bemerton Lodge Gardens, read an excellent paper on the "Cultivation of Cyclamen," and exhibited a well-grown specimen plant. He detailed his methods of cultivation. Mr. A. Hammond read a longer essay on "Friends and Foes in the Garden," and his remarks were exceedingly helpful. Both essays were well received, and a considerable number of questions were put to the essayists, which were dealt with in a capable manner.

The judges appointed by the meeting were, Messrs. W. Asher, C. Craske, E. Field, C. G. Wyatt and Miss E. J. Hardy. They awarded Mr. Drake the premier prize, with Mr. Hammond a close second.

Mr. S. W. Tucker presided, and there was a good attendance.

The Secretary read a letter of appreciation and gratitude from the City Council for the arrangements made by the Society for the exhibit of living wild flowers. It is hoped that the arrangements made for the exhibits in Salisbury will have even greater popularity than similar displays in other towns, as in addition to the maintaining of the exhibit, an important feature of the scheme is the offer to name wild flowers on Tuesday evenings, at the Public Library, commencing the first week in April.

The Secretary also called attention to the value of the Society's free admission tickets to the R.H.S. fortnightly shows.

LINCOLNSHIRE GARDENERS'.

The prestige of the Lincolnshire Gardeners' Association received sincere recognition on the occasion of the annual dinner at the Hotel Central, Lincoln. Mr. C. H. Newsum (President) occupied the chair, his supporters including the Sheriff (Mr. R. C. Minton), Alderman Milner, Councillors R. W. Day and J. Hague, Captain H. N. Newsum, Messrs. W. R. Pennell, W. T. Bell, and Worthington. Apologies for absence were announced from the Mayor (Councillor C. E. Snook), Major Clarke and Col. Charles Brook, who, it was stated, had been particularly good friends of the Association.

The members of the Association endorsed their President's suggestion that the Secretary (Mr. J. Roberts) should forward their hearty good wishes to Mr. Brook on the occasion of his eighty-ninth birthday. Mr. Newsum proceeded to present certificates and awards to Messrs. J. Clarke, G. W. Hobbs, W. Toon, Messrs. Pennell and Son, Messrs. Lawson and Son, also two Certificates and a Banksian Bronze Medal to Mr. J. Drew, the winner of the most points in the various competitions during the year.

Proposing "The Lincolnshire Gardeners' Association," the President observed that undoubtedly the Association was doing excellent work in the district.

In response, Mr. H. Brummitt (Chairman of the Association), observed that during the year they had lost by death one of their Vice-Presidents, Mr. W. Skelton Dawson. They had also shown practical recognition of the sixtieth anniversary of the marriage of Mr. Maplethorpe. Regarding the Association generally, he said it was educational from centre to circumference. Even professional gardeners derived benefit from attending their meeting and joining in the discussions. It was interesting to recall that last November, when they had their annual fruit and Chrysanthemum show, the boys and girls of the elementary schools were invited to attend and write essays upon what they saw.

"The Mayor, Sheriff and Corporation," were toasted at the call of Mr. S. B. Oldershaw, who, in his references to the Sheriff, said they ought to remember the part which Mr. Minton had taken in arranging lectures on gardening and matters allied to the subject. The Sheriff who responded, acknowledged the splendid assistance which members of the Gardeners' Association had rendered to allotment holders. Their generosity bore great fruit. Then they were a means of benefiting the young to an immense degree. When they wanted a school they picked the site before houses were commenced, and at Cross o' Cliff Hill they would find a delightfully long avenue, which they were required to beautify so as to give the children an introduction to Nature and new life.

Other responses came from Alderman Milner and Councillor J. Hague, and Captain H. N. Newsum proposed "The City and Trade of Lincoln."

Councillor R. W. Day and Mr. W. R. Bennell responded, after which Mr. W. T. Bell submitted "The President," which was musically honoured.

ANSWERS TO CORRESPONDENTS.

Name of Fruit—*F. H.* Apple Lord Lennox.

Names of Plants.—*T. H. B.* 1, Cupressus Lawsoniana var. albo-variegata; 2, C. L. var. lutea; 3, Thuya orientalis var.; 4, Sciadopitys verticillata; 5, Cupressus Lawsoniana; 6, Cupressus obtusa var. densa; 7, Juniperus virginiana var. glauca; 8, Danae Laurus; 9, Quercus Ilex; 10, Phillyrea latifolia; 11 and 21, Raphiolepis ovata; 12, Quercus acuta; 13 and 16, Griselinia littoralis; 14, Cupressus pisifera var. squarrosa; 15, Ligustrum coriaceum; 17, send in flower; 18, Lonicera nitida; 19, Escallonia illinita; 20, Berberis Gagnepainii; 22, missing; 23, Spiraea japonica; 24, send in flower.—*G. L. A. S.* Abelia chinensis. *C. B.* 1, Cotoneaster microphylla; 2, Azara microphylla; 3, Escallonia macrantha; 4, Elaeagnus pungens aurea variegata.—*J. K.* Salvia leucantha.

Method of Using Bones.—*E. F. C.* Bones cannot be properly ground up by a hand-power machine. Complicated machinery, driven by steam power, is necessary, and this would be impracticable in a private establishment. The bones may be utilised for manure, however, by burning them in an old zinc pail or iron pot of some description. The pail or pot could be filled with bones and placed over a good fire until the bones become red-hot. They should then be allowed to cool, when they may be pounded up as easily as egg-shells, by putting them in a strong box, or on any hard surface and beating them with a hammer. The more nearly they are reduced to a powder the more useful they will be, and the sooner will they supply plant food, consisting of phosphate of lime, but no nitrogen, as this has been driven off in burning. The quantity of phosphate of lime varies between sixty and eighty-two per cent., according to the nature of the bones, with about one per cent. of alkaline salts. This manure is described as calcined, or burnt bone. The above method would enable you to get the ashes only, but the bones could be burnt on an ordinary garden bonfire, and afterwards picked out and pounded as described; or the bonfire ashes sifted to get out all the pieces, for many of the bones crumble under this method. In either case the full benefit of the bone ash would be obtained.

Tenancy of Cottage.—*J. B.* As your tenancy of the cottage only started in 1923 you are not protected by the Rent Restriction and Mortgage Interest Acts, therefore the tenancy is determinable by either side on giving one week's notice expiring on the day on which the rent is paid.

Unhealthy Fruit Trees.—*F. H.* The trouble is chlorosis, and is due to the excess of lime in the subsoil, which prevents the trees from making use of the iron in the soil, even although there may be plenty of this present. The matter is still under investigation, and little is known about it at present. Try spraying the foliage with a solution of one-and-a-half ounce of sulphate of iron in a gallon of water. This has often proved successful, and is a regular practice in some American nurseries. Spray early in the season before the foliage takes on the sickly appearance, and repeat the operation a few weeks later. It would be advisable to proceed with caution, in case the wash causes any injury. Try one or two trees and wait a few days to see whether the leaves are scorched before doing the rest. We do not think there is any danger however.

Communications Received.—W. F. E.—J. H.—R. E. A.—H. M.—J. F.—J. B.—S. J.—F. C. P.—R. F.—S. E. S.—J. C. M.—C. G. C.

SCHEDULE RECEIVED.

Yorkshire Flower Show and Gala.—Sixty-sixth Exhibition to be held on Knavesmire, York, on Tuesday, Wednesday and Thursday, June 19, 20 and 21.—Secretary, Mr. P. Meanim, The Assembly Rooms, York.

THE
Gardeners' Chronicle
No. 2149.—SATURDAY, MARCH 3, 1928.

CONTENTS.

Acacia Cunninghamii and A. podalyriaefolia 149
Alpine garden—
  Arabis caerulea ... 152
  Primula Auricula Bauhini 152
Awards of Garden Merit 148
Birds and fruit ... 161
Bodnant 156
Books, notices of—
  Gladiolus Annual ... 148
  Plant Hunting ... 158
Bracken, destruction of 148
Brussels Sweet Pea Exhibition 147
Carnations, concerning Border 159
Cotoneaster frigida var. montana 162
Dominion and Colonial correspondence ... 160
Flower garden—
  Eccremocarpus scaber 153
"Gardeners' Chronicle" seventy - five years ago 149
Gardeners' Royal Benevolent Institution 162
Garden notes from south-west Scotland 153
Gladioli 147
Glasnevin, notes from 153
Grass for games ... 161
Hardy flower border—
  Geranium platypetalum 153
Hill, Dr. A. W., honour for 147
Hippeastrums at Kew 149
Kerchove de Denterghem, M. le Comte A. de 148
La Mortola, damage by frost at 154
Le Jardin de Jussieu... 154
Manures for March, garden 160
Obituary—
  Basham, John ... 164
  Heede, A. van den... 164
Orchid notes and gleanings—
  Catasetum Garnettianum 153
Pest Destruction in Germany 147
Post mark advertising by fruit growers ... 148
Primula Juliae and its hybrids 152
Rhododendrons ... 155
Rhubarb and its wholesomeness 162
Rose trials at Wisley... 147
Scottish Horticultural Advisory Committee 147
Societies—
  Reading Gardeners' 164
  Royal Horticultural 162
Strawberry troubles... 161
Superphosphate and Potatos 161
Trees and shrubs—
  Hedysarum multijugum 155
  Sorbus arranensis ... 155
Vegetable garden—
  The Climbing French Bean under glass 161
Violas, a revision of... 160
Week's work, the ... 150

ILLUSTRATIONS.

Aloe insignis, 153; A. plicatilis 152
Bodnant, Taly-Cafn, North Wales: views of 155, 156, 157, 158, 159
Catasetum Garnettianum 151
Kerchove de Denterghem, M. le Comte A. de, portrait of 148
Snowdrops at Monreith 149

Supplement Plate.

Bodnant from the Lily Terrace.

Average Mean Temperature for the ensuing week deduced from observations during the last fifty years at Greenwich, 40.9°.

Actual Temperature.—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London, Wednesday, February 29, 10 a.m. Bar. 30.0. Temp. 46°. Weather, Fine.

Gladioli. II.

America was the first country to publish a paper devoted entirely to the Gladiolus, which it did in 1914 under the title of *The Modern Gladiolus Grower*. This continued for four years as a monthly publication, and was then enlarged and issued under the title of *The Flower Grower*. It was in this paper that Clark W. Brown's Gladiolus Nomenclature was first published. It was afterwards published with corrections and additions in 1923, and contained over three thousand names! The first Gladiolus Society was also started in America, in 1909, and at the show held at Rochester the following year it was reported that the membership stood at 137. The growth of the society was steady until 1922, when the number was about 600; since then it has grown with great rapidity, and membership now runs to thousands. *The Modern Gladiolus Grower* was adopted as its official organ, and continued as such for some years after the change of title to *The Flower Grower*, and until the Society started a quarterly *Bulletin*, which was, in 1926, made a monthly publication. In England, the first Gladiolus Society was formed in 1911 by Mrs. Atkinson, under the title of the National Gladiolus Society. The Society published a number of *Bulletins* down to 1916. One show was held in 1911, and consisted of six commercial classes only. Two shows were held annually up to 1913 and one in 1914. During the war the Society was wound up. Until the formation of the National Gladiolus Society, Messrs. Kelway and Burrell were principally responsible for any Gladiolus exhibits which were staged at the R.H.S. meetings. At the shows organised by the National Gladiolus Society other firms, both English and foreign, put up interesting exhibits, and Messrs. Atkinson, in 1914, broke away from the stereotyped form of staging by putting up a semicircular tier-staging with a background of soft grey, which admirably set off the flowers and produced a charming effect. The Society no doubt did much to popularise Gladioli, and the flowers began to appear at the larger provincial shows prior to the war. During the war the cultivation of Gladioli declined, but it was not entirely neglected; Messrs. Kelway, Messrs. Barr, and Messrs. Bath, together with a few keen amateurs, struggled to retain as many varieties as time and lack of labour permitted. The close of the war saw a revival of interest and an increase in the number both of trade and amateur growers. Exhibits of the flower gradually increased at the R.H.S. meetings, and in 1925 a few keen admirers of the flower promoted a small show at the Royal Horticultural Society's August meeting. Following the success of that effort and due largely to the persistent energy of Mr. A. E. Amos, the British Gladiolus Society was formed later in the year, and arrangements were made by the aid and assistance of Mr. Macself to hold a show at Burton-on-Trent in 1926. The publication of Mr. Macself's book on the Gladiolus, in 1925, also helped to draw attention to the many uses to which the flower may be put and the ease with which it may be grown. The British Gladiolus Society continued to grow, and at the invitation of the Taunton Deane Horticultural Society it organised a show at Taunton in 1927; this show not only astonished both societies by the number and size of the exhibits staged, but created a record in the number of persons who paid an extra fee to see the flowers. The Society also issued a very interesting *Annual* in 1927 to its members, who number about two hundred. The *Annual* for 1928 is now available (see p. 148), and the list of fixtures for 1928 shows that the British Gladiolus Society will hold a show in London this year on August 10. Southport Corporation has done much to bring Gladioli into prominence by using the flowers extensively for summer bedding, and by offering generous prizes at their annual flower shows. Many "State" societies have been formed in America, but particular mention may be made of the New England Gladiolus Society, which has already issued two very interesting Year Books. In Canada, the Ontario Gladiolus Society was formed in 1922, and in 1923 its name was changed to the Canadian Gladiolus Society; this Society issued its first *Bulletin* in November of that year, and has continued to issue one every year since. In South Australia the late Mrs. Caley Smith did much to improve the flower. Her work is being carried on by Messrs. Errey Brothers and others in Victoria. Messrs. Errey Brothers may be mentioned as the raisers of Victor, King Pearl, Gertrude Errey, and others, which may be found in English and American catalogues. There is also a society in Melbourne named the Dahlia, Carnation and Gladiolus Society. New varieties are coming from New Zealand, but of their merits we are not in a position to speak. Enough has been written, however, to show that the Gladiolus is one of the most popular flowers in the world at the present time.

Rose Trials at Wisley.—The Council of the Royal Horticultural Society desires us to remind raisers of new varieties of Roses that six plants of each variety for trial should reach The Director, R.H.S. Gardens, Wisley, Ripley, Surrey (Railway Station, Horsley, Southern Railway), on or before March 31. This trial of Roses for garden decoration is now in its sixth year, and it has received many acquisitions each season, so that several hundred varieties are now represented in it, originated in almost every country where Roses are prized for their beauty as garden plants. This trial is not intended to test Roses for exhibition purposes.

Honour for Dr. A. W. Hill.—The University of Adelaide has recently bestowed upon Dr. A. W. Hill, the Director of the Royal Botanic Gardens, Kew, the degree of Doctor of Science. As our readers are aware, Dr. Hill is at present visiting the botanical, agricultural and forestry institutions of Australia, New Zealand, and Java on the behalf of the Empire Marketing Board.

Pest Destruction in Germany.—In Hessen-Darmstadt, efforts are being made by the Chamber of Horticulture to instruct fruit growers in the spraying of trees, and to induce a more general practice of this invaluable preventive of pests and diseases. This year it is contemplated to provide from state funds an increased number of motor-sprayers, and to carry out in several places a systematic spraying of the trees with Carbolineum. In the previous year, where this was done, the results have been so obviously successful that growers are inclining more and more to the practice of early and effective spraying.

Brussels Sweet Pea Exhibition.—The fifth National Sweet Pea Exhibition, with an International section, will be held in Brussels on June 30, July 1 and 2, 1928. It is being organised by the society known as "Friends of the Sweet Pea," and will enjoy the patronage of the Queen and the Minister of Agriculture as well as the support of many other distinguished persons. There are many classes open to Belgian growers, and diplomas and money prizes are also to be offered in the section for foreign competitors. Quite a number of valuable cups and other prizes are available for competition in the various classes, and the special Prix d'Honneur, offered by the Queen of the Belgians, is to be awarded to the competitor in one of the national classes who is considered—by his exhibit—to have contributed most to the success of the show.

Scottish Horticultural Advisory Committee.—At the suggestion of the Royal Caledonian Horticultural Society—as already noted in these pages—and with a view to establishing a thorough system of communication with the horticultural industry in Scotland, the Board of Agriculture for Scotland appointed during last summer the Scottish Horticultural Advisory Committee which, subject to the co-option of two additional members, and possibly further additions as may be considered advisable by the Committee, will be representative of all the interests concerned in Scotland. The Chairman of the Committee is Mr. William Cuthbertson, V.M.H., J.P., and the membership comprises:—Mr. Thomas Brown (Lanarkshire Fruit Growers' Association); Mr. John Cairns (Glasgow and West of Scotland Horticultural Society); Mr. W. Cuthbertson (Scottish Seed and Nursery Trade Association); Professor J. M. F. Drummond, Botany Department, Glasgow University; Mr. W. Forrest (Clydeside Fruit and Tomato Growers' Trading Society, Limited); Mr. David Lowe (Edinburgh Market Gardeners' Association); Mr. J. F. McDonald (Perthshire and Forfarshire Fruitgrowers' Association); Dr. R. Stewart MacDougall, Zoology Department, Edinburgh University; Mr. R. L. Scarlett, C.D.A. (Royal Caledonian Horticultural Society); and Professor W. Wright Smith, Botany Department, Edinburgh University. The functions of the Committee are of a two-fold character. It brings to the notice of the Board any questions concerning the horticultural industry in regard to which it is thought that the Board might be of assistance, and on the other hand the Board is able to put proposals before the Committee for its consideration and advice.

Two meetings of the Committee have already been held, the first in October and the second on February 1. Full programmes of matter for discussion were submitted at each meeting, and a number of matters of importance to the industry were discussed. In the past the Board has derived great advantages from close contact with similar bodies, and is convinced, from the proceedings of the present Committee, that its activities will be productive of considerable benefit both to Scottish Horticulturists and official administration. Any matter of importance in connection with the horticultural industry can be brought before the Scottish Horticultural Advisory Committee at any time through any of its members, or by a communication addressed to the Secretary, Board of Agriculture for Scotland, Edinburgh.

Gladiolus Annual, 1928.—The entertaining and interesting publication recently issued by the British Gladiolus Society should be the means of securing many additional members and extending the cultivation of its name flower. Some re-arrangement of the articles and statistics contained in the seventy pages of matter would have improved the general appearance of a publication which deserves a stout cloth cover instead of the paper one that is sure to cause annoyance to those who will need to consult it frequently. However, it is an excellent *Annual* and a credit to the young Society. Mr. James Kelway gives his impressions of the Gladiolus Show held in Taunton; Mr. A. J. Macself discusses Gladioli in the north and the south, and urges the need for two exhibitions, northern and southern. Mr. J. L. Gibson deals with hybridisation and observes that he has been using Gladiolus tristis, but has not been able to retain in its children the fragrance of the parent. The Flowering Table, compiled by Mr. A. E. Amos, the energetic Secretary of the Society, was probably inspired by a somewhat similar article that appeared in these pages from the pen of Major G. Churcher, who contributes "Blooming Dates"—a somewhat infelicitous title; these notes should prove very useful to those who have to "time" flowers for certain purposes; indeed, "Timing" is also discussed by F. Wynn Hellings. New Gladioli are described and the Gladioli of Canada and the United States are dealt with at some length. A particularly valuable compilation of books dealing with Gladioli, together with references to articles on the flower that have appeared in the horticultural press, has been made by Major G. Churcher, the President of the Society, and if similar references are compiled annually, *The Gladiolus Annual* will become a means of ready reference which all students of Gladioli will greatly appreciate. The coloured illustration of the variety Autumn Fascination is very fine, but the other eight illustrations in colour fall far below that standard. The minimum annual subscription to the British Gladiolus Society is 5s.; the Hon. Secretary is Mr. A. E. Amos, 10, Bergholt Road, Colchester.

International Horticultural Exhibition at Le Mans.—The State Railway Company, the Agricultural Services of the region, the Chrysanthemum Society of West France, as well as all professional organisations of the district are combining to arrange an International Exhibition to be held at the Quinconce des Jacobins, Le Mans, from June 8 to 17. There will be in connection with this exhibition a Conference and various tours for the benefit of market gardeners. Numerous prizes are offered, such as diplomas, medals, objects of art, etc., and cash prizes. There will be three categories in each section: (1) Groups of producers; (2) Groups of merchants; and (3) Individuals (that is, professionals, amateurs and gardeners). All information concerning this exhibition may be obtained from M. Leloup-Grimoux, 18, Boulevard de la Barillerie, Le Mans, France, and intention to exhibit must be sent before May 1. Staging will begin on June 4, and exhibits may be removed on Monday, June 18. All care will be taken to protect the plants or articles exhibited, but no responsibility can be accepted. The spaces required for plants will be free, but all commercial exhibits will have to be paid for according to the space occupied. The General Director of the Exhibition is M. Le Roux, Director of the State Railway; M. Le Feuvé, Mayor of Le Mans, is the President of the Commission; and the General Manager of the Exhibition is M. Leloup-Grimoux, President of the Chrysanthemum Society of West France.

M. le Comte Andre de Kerchove de Denterghem.—The next Quinquennial Horticultural Exhibition at Ghent, which will be opened on April 21, will bring into further prominence a great figure in Belgian horticulture, whose portrait we have the greatest pleasure in presenting to our readers. For very many years the leader of the Belgian horticulturists was the late Comte Oswald de Kerchove de Denterghem, statesman and botanist, author of excellent works on Palms and Orchids, and President of the Société Royale d'Agriculture et de Botanique de Gand. After his death, M. Alexis Callier succeeded to the presidency, and when he passed away, M. le Comte André de Kerchove de Denterghem, Governor of Flanders—and son of the late Comte Oswald—was appointed President of the great Horticultural Society of Belgium. Comte A. de Kerchove de Denterghem was born at Ghent in 1885, and he has had a wonderful career. He became a Doctor of Law in 1908 (University of Ghent), and was appointed to the Belgian Legation at Tokio in the same year; Legation Secretary in London in 1910; in Berlin in 1912; Bucarest in 1914, and at the Hague in 1915. In 1919 he became Secretary to the Belgian Embassy in London, and was also appointed Belgian Delegate to the Supreme Economic Council of London. A year later the Comte filled the arduous position of Adviser to the Legation and Chargé d'Affaires in Berlin, with the special mission of renewing diplomatic relations with Germany after the Great War. His next appointment was that of Governor of Flanders, and quite lately—this year—he became Envoyé Extraordinaire and Minister Plenipotentiary, while retaining his Governorship of one of the great Belgian provinces. It was in 1906 that Comte André de Kerchove was appointed Associate-Fellow of the Société Royale d'Agriculture et de Botanique de Gand and in 1925 he became its President. He was appointed by the Belgian Government as the official delegate to the International Horticultural Shows at Haarlem and Paris, and is a member of the Council of the Brussels State Botanic Garden. He holds many distinctions, including those of Commander of the Legion of Honour and Officer of the Order of Leopold. M. le Comte A. de Kerchove de Denterghem fills all his positions superbly; tall and gracious, courteous and sympathetic, altogether charming, he is also a clever linguist and a great orator, and at the forthcoming Floralies Gantoises he will be the chief personality among horticulturists.

M. LE COMTE A. DE KERCHOVE DE DENTERGHEM.

Destruction of Bracken.—At a recent meeting of the Botanical Society of Edinburgh, Dr. W. G. Smith gave interesting details of the work done, and the results obtained in connection with this subject, from experiments that have been conducted on the experimental farm of the Edinburgh and East of Scotland College of Agriculture, at Boghall. He stated that several plots of Bracken had been under treatment for a number of years, and that better results had been obtained from those that had been cut early in July of each year, than from those cut at an earlier date. Although no effect was apparent after the first year's cutting, after two years the differences in growth were very marked. It was discovered that fifty per cent. of the fronds were destroyed on one plot that had received applications of salt during May, and had then been put down to sheep, the sheep, in searching for the salt, destroyed a large number of the fronds; this work of destruction was followed by cutting the remaining fronds during July. After these treatments had been applied for several years, the underground portions of the Bracken were examined These were found to be shrunken, and a large number of the deep, food-storing parts had decayed; the active roots and stems were practically confined to the surface The effect of this systematic destruction was to reduce the size of the foliage each succeeding year, but after four years work, buds, although weak, were still produced on the rhizomes.

Post Mark Advertising by Fruit Growers.—Letters from South Africa are arriving postmarked with the words: Vruchte voor Gesondheid (Fruit for Health). This is presumably an enterprise undertaken by a syndicate of the fruit-growers in the Union of South Africa, with the object of inducing a wider use of fruit as a food, which will benefit equally all the growers. Whether the post-mark on letters which come to England will have the effect of increasing the imports of South African fruits is doubtful; it is probable that the growers are depending almost wholly upon the influence of the propaganda within the limits of the Union itself.

Honour for Professor Hugo de Vries.—The famous Dutch botanist, who has done such excellent work on plant mutations, has just celebrated his eightieth birthday, and Queen Wilhelmina took advantage of the occasion to confer upon him the Grand Cross of Orange-Nassau.

Awards of Garden Merit.—Vol. LIII, Pt. 1, of the Royal Horticultural Society's *Journal* contains a further list of plants that have received this award. The following are the plants so recognised. Tropaeolum polyphyllum, a native of Chile, that has been cultivated in this country for about a century, and which is an attractive subject for a sunny, well-drained position in the rock garden, where its trailing stems, furnished with glaucous-blue foliage and small golden-yellow flowers, will provide a pleasing spectacle during June and July. Cistus × purpureus is well-known to admirers of the rock garden at Wisley, where during the summer months it always commands admiration. It is a natural hybrid of C. ladaniferus and C. villosus, and produces innumerable large reddish flowers, the centres of which are blotched with deep red. Saxifraga × Elizabethae is a well-known and popular natural hybrid that makes large mats of deep green rosettes of leaves, and during early spring these are often almost completely hidden by masses of soft yellow flowers, borne on pink-tinted stems about two inches high. Geranium sanguineum var. lancastriense is another popular alpine subject, and deservedly so, for it is one of the best of the Geraniums. Cyclamen neapolitanum and C. ibericum have both received awards. They are both hardy and are fond of lime, although it is not essential, and are attractive in foliage and free-flowering if happily situated. C. neapolitanum has deep, crimson-centred, white to pink flowers, produced during autumn, and deep green, white- or grey-marbled, Ivy-shaped leaves; while the flowers of C. ibericum are carmine, and produced during winter and early spring. Omphalodes cappadocica, that is known also as O. cornifolia and O. Wittmanniana, received an Award of Merit in 1923. It is a beautiful alpine plant that delights in cool, slightly shaded situations, and produces during summer and again in autumn, sprays of rich blue, Forget-me-not flowers, from tufts of grey-green, ovate-lanceolate leaves. Erica carnea var. King George is one of the best of the early-flowering Heaths, of which there are many named forms, while Erica vagans var. St. Keverne is a bright-flowered, dwarf and compact form of the popular summer-flowering Cornish Heath. Amelanchier canadensis is well-known as one of the most beautiful flowering trees in cultivation; in April it is usually covered with racemes of pure white flowers, while in autumn its foliage is invariably richly tinted. The deciduous Rhododendron Vaseyi is hardy in this country and is well worth growing for its clusters of pale pink, red-brown spotted flowers, that are produced during early May. Lupinus Sunshine is one of the best of the newer varieties of the perennial Lupin, and is worthy of extensive cultivation.

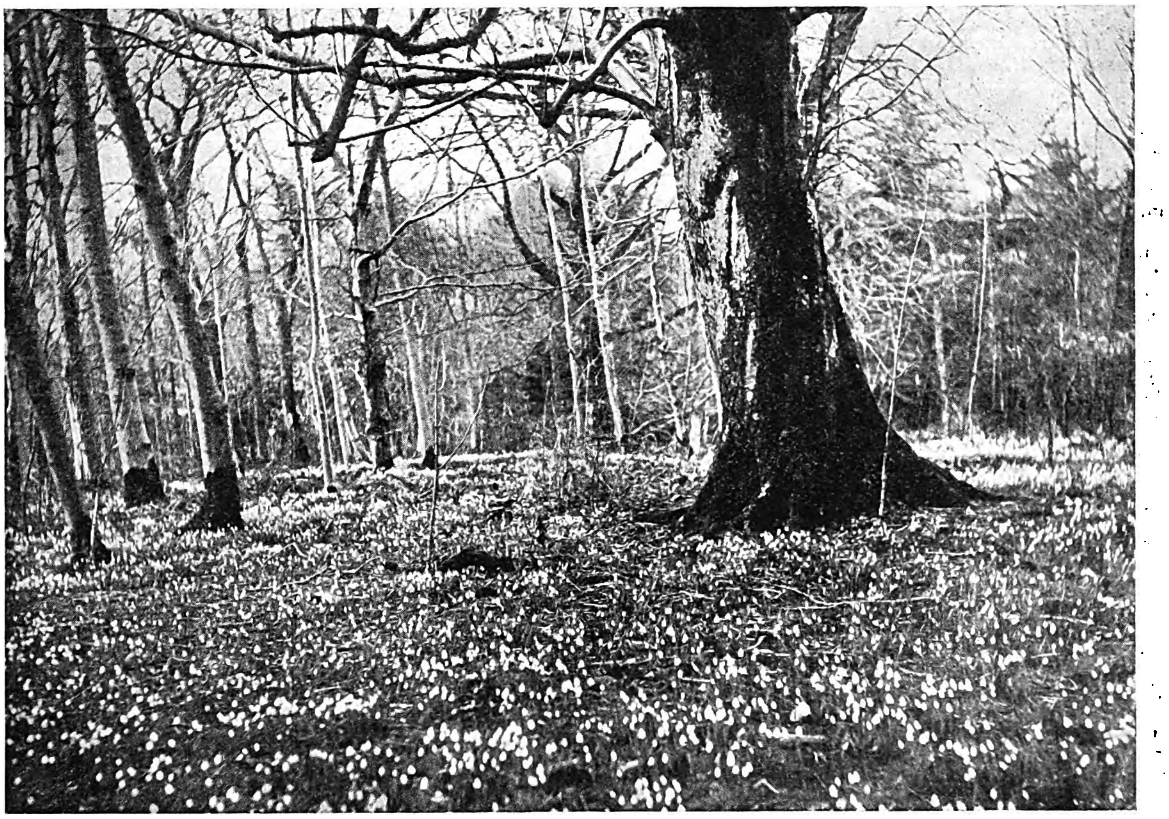

FIG. 74.—SNOWDROPS AT MONREITH.

(see p. 153.)

Acacia Cunninghamii and A. podalyriaefolia.—We have received the following letter from Mr. C. T. White, Government Botanist of Queensland, who writes from the Botanic Gardens, Brisbane, under date January 3. We are greatly obliged to Mr. White for his observations, which confirm those that appeared on p. 94, from Mr. J. F. Bailey.—"I was much interested in the note and photograph of Acacia Cunninghamii in your issues of November 19, 1927, p. 413, and of November 26, p. 425, respectively. The plant described and figured, however, is not Acacia Cunninghamii, but I should say, A. podalyriaefolia, commonly known in Australia as Queensland Golden Wattle, although it also grows naturally in the north of New South Wales. A. Cunninghamii is one of the Juliflorae section characterised by having the flowers in slender spikes known in Australia commonly by the appropriate name of "Fingerettes." This plant is very common in Queensland and northern New South Wales, and there are several forms of it, all very handsome, but it is not cultivated to any great extent, only occasional plants being seen in gardens. A. podalyriaefolia is one of the most extensively cultivated species of the genus. It has comparatively dark flowers, making a good contrast with the grey foliage (phyllodes). It seems to withstand a great variety of climatic conditions, as it is seen growing in gardens so far apart as Adelaide (South Australia) and Cairns (North Queensland). It is the plant that is used in Brisbane in connection with Wattle Day celebrations."

German Dahlia Exhibitions.—The German Dahlia Society is holding its annual festival in Magdeburg, from September 7 to 17, 1928. An exhibition of Dahlias and other autumn flowers will be held in the Vogelgesang Park, a beautiful open space to which, in 1912, was added a large Rose and hardy plant garden, and which also comprises a permanent Dahlia garden in which each year 15,000 or 16,000 Dahlias are planted out. In the present year this number is being increased to 50,000, and a large hall is to be erected in which 35,000 cut Dahlias will be on view, besides exhibits of hardy flowers and florists' groups. The town of Gera is also taking up the cultivation of the Dahlia, and the local authorities are laying out a piece of land on the upper Waldstrasse as a permanent Dahlia garden, where the Thüringian and other German Dahlia growers may have an opportunity of exhibiting their varieties to the public. The work is so far advanced that the exhibition, which will take the form of a flower festival, will be opened during the summer of the present year.

Hippeastrums at Kew.—These are a very conspicuous feature in the Conservatory (No. 4 greenhouse), at the present time. A large group of plants carrying between sixty and seventy spikes give a very gay appearance to the warm end of the house Both dark red and light striped, or streaked, blooms are well represented.

Appointments for the Ensuing Week.—Sunday, March 4: Wakefield and North of England Tulip Society's meeting. Monday, March 5: Romsey Gardeners' Association's meeting; Birmingham Gardeners' Mutual Improvement Association's meeting. Tuesday, March 6: Royal Caledonian Horticultural Society's meeting. Wednesday, March 7: London Gardens Guild lecture; Wimbledon Gardeners' Society's meeting; Nottingham and Notts. Chrysanthemum Society's meeting; Pangbourne Gardeners' Mutual Improvement Association's lecture. Thursday, March 8: Western Commercial Horticultural Society's show (two days); Leigh-on-Sea Horticultural Society's lecture. Friday, March 9: Manchester and North of England Orchid Society's meeting; Royal Horticultural Society of Ireland meeting. Saturday, March 10: Lancaster Horticultural Association's meeting.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Effect of artificial light on Plants.*—It has been observed in your columns that the light of the moon may have some beneficial influence on vegetation, and that the Crocus expands its blossoms under the light of candles; this has called to mind an old project which might now be worth a trial, namely, the effect in green- and hot-houses of lighting them artificially. The notion of such an experiment originated on having observed the great power of light without much heat in the north of Prussia. There flower seeds obtained from England were sown whilst some snow was still on the ground; they produced plants of rapid growth and of dimensions far exceeding those usually attained in this country. The effect of artificial illumination might be easily ascertained; but it would be essential to fairness of experiment that means should be provided for carrying off the air vitiated by combustion so that it should not come in contact with the plants. *M. Gard. Chron., February 26, 1853.*

Publications Received.—*Musk Melon Production*, by J. W. Lloyd; *The Pear and its Culture*, by H. B. Tukey; *Hardy Shrubs*, by F. A. Waugh. All published by the Orange Judd Publishing Co., 15, East 26th Street, New York, or Kegan Paul, Trench, Trübner and Co., Ltd., London. Price $1.25 each.

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven Moore, Manchester.

Miltonia spectabilis and its varieties.—These distinct and finely-coloured Orchids, that generally flower during late summer, may be grown suspended in the Cattleya house, if shaded from direct sunshine. New roots are produced as the plants commence to grow, and any that may require fresh rooting material should receive attention. These Miltonias, including M. Regnelli, M. Clowesii and M. candida, are mostly surface-rooting, and do not require a great depth of compost, therefore shallow pans are the best receptacles. A compost of three parts Osmunda fibre to one part Sphagnum-moss, well mixed together, will form a suitable rooting medium, while ample drainage is essential, for the plants should be watered freely when growing, and well-ripened growths are necessary for the production of flowers of good quality.

Chysis.—Members of this genus, including Chysis aurea and C. Limminghii, and hybrids such as C. langleyensis and C. Sedeni, that have been resting in a cool house since maturing their bulbs last autumn, will require careful attention directly they start into growth, for the flower spikes develop immediately. These Orchids should be removed to a warmer house, and a gradually increased supply of water may be given at the roots, while any necessary repotting may be done as the young growths advance. Well-drained baskets or pans should be used, and a compost consisting of equal parts A.1. and Osmunda fibre, one part Sphagnum-moss and one part fibrous loam, with sufficient coarse sand or crushed crocks to keep it open. Suspend the plants in a light position in a warm house, where they may enjoy a free circulation of air and plenty of moisture during the growing season.

Cycnoches.—Species of this singular and beautiful genus, including C. aureum and C. chlorochilon, and the interesting C. ventricosum, will now be starting into growth, and conditions similar to that advised for Chysis will be found to suit them admirably. The flowers are produced from the axils of the leaves on the upper part of the newly-made pseudo-bulb, during summer, therefore care should be taken not to allow moisture to lodge in the young growths, as they readily damp-off.

THE KITCHEN GARDEN.

By Allan Falconer, Gardener to the Cheadle Royal Mental Hospital, Cheadle, Cheshire.

Trenches for Runner Beans.—Unless the ground is trenched throughout, a trench may be opened two feet six inches wide and two spits deep; put plenty of good, well-decayed cow manure into it, dig the bottom, and half-fill it with soil, then leave it to the elements. Complete the filling of the trench later, when the soil is dry. This method of preparing the trenches might also be applied for Peas, but complete trenching, or double-digging is best; where exhibition vegetables have to be produced, deep cultivation is an important factor.

Capsicums, Chilies and Aubergines.—If these are required for culinary purposes, seeds may be sown now in a temperature of 65°. Immediately the seedlings are large enough, pot them singly into sixty-sized pots, and later into five-inch pots; this size will be large enough for the Capsicums. Grow them in light, fibrous loam and Mushroom-bed manure, with sand and bone-meal added. Grow them steadily in a warm house, and when well established expose the plants to sunshine in a cool house or frame. Aubergines will require a further move into six- or seven-inch pots, while the soil should be lighter than that advised for Capsicums. Remove the growing points when the Aubergines are about six inches in height, keep them well-syringed to protect them from red spiders, and do not allow more than four fruits to ripen on each plant. These plants are very decorative so well as being useful for culinary purposes.

Parsnips.—The general weather conditions throughout the country have prevented early seed-sowing of this crop, but directly suitable conditions prevail seeds may be sown in well prepared ground that was heavily manured for a previous crop and has been recently trenched. Break down the surface of the soil to a fine tilth and make drills one-and-a-half-inch deep and eighteen inches apart. Sow the seeds in groups of three or four one foot apart, and eventually thin the seedlings to one; press the seeds into the soil, and lightly cover them. As germination is slow, Radish seeds may be sown in the same drills; the Radishes will mark the rows, and will permit the early use of the Dutch hoe.

Maincrop Tomatos.—Seeds, to produce more plants for the main crop, may be sown under the same conditions as advised for the earlier sowing; plants from these seeds are often better than those raised earlier in the year.

FRUITS UNDER GLASS.

By T. Pateman, Gardener to Sir Charles Nall-Cain, Brocket Hall, Hertfordshire.

The Early Vinery.—The early vines are making excellent growth, and all the lateral growths should be stopped at two joints beyond the bunch to be retained; those bunches that are not required may be removed. When stopping the laterals it is not wise to deal with all of them at the same time; the strongest should be shortened first. During cold, sunless weather, care should be exercised with regard to the promotion of atmospheric moisture, for too much moisture will tend to develop aerial roots, and it may also cause a warty appearance on the undersides of the leaves. So soon as the vines are in flower, damping of the floors in the early morning should cease, and a drier atmosphere during the day may be maintained, to ensure a free distribution of the pollen. Should the weather prove bright and sunny, the floors may be slightly damped with a fine-rosed can before closing the house, although care should be taken not to wet the hot-water pipes as this will produce a steamy atmosphere, a condition not to be recommended at any stage of growth.

Pears and Apples.—Special varieties of these fruits, if grown in pots under cool conditions, will be found to give excellent returns for liberal treatment. They should not be coddled during any stages of their growth. Apple trees will set their fruits more freely than either Pear, Cherry, or Plum trees, while when growing collections of these fruits it is always advisable to grow at least one variety of each that is a good pollen bearer. The trusses of bloom may be thinned where they are crowded, while pollenation may be effected with a soft brush or a rabbit's tail brushed over the flowers daily at noon. The atmosphere of the house should be kept slightly moist, but by no means damp at this period of the trees' development; a parched atmosphere has a tendency to weaken the flowers, and may cause the fruits to drop prematurely later.

Orchard House.—Where various types of hardy fruits are grown under glass it is wise to have trees held in reserve to replace any that fail to produce good crops. There is still time to pot these, and trees so treated will form good fruiting specimens; if they are lifted carefully the trees will scarcely feel any effects of replanting. They may produce a few fruits during the first season and will thus insure against failure caused by the removal of unprofitable trees.

HARDY FRUIT GARDEN.

By T. E. Tomalin, Gardener to the Earl of Bessborough, Stansted Park, Emsworth, Sussex.

Figs.—In the colder districts, where Fig trees have been covered during the winter months, the protecting material may now be removed, and the trees pruned before the sap becomes active. Where thinning is necessary, some of the older branches, and all diseased and dead wood, may be removed. Thin the young wood by the removal of all long, sappy shoots, retaining those which are short and well-ripened; these may be tied in at nine to twelve inches apart. The young shoots should not be shortened, because it is on the tips of these that the fruits will be produced; the fruits which form on the lower portions of these branches, in late summer, seldom come to maturity, but usually shrivel and drop during the spring months. For this reason many growers remove all young green Figs in late August or early September. Plantations of Figs may now be made. To encourage the formation of short-jointed and fruitful wood, the border should be restricted in width to about two feet six inches. An ideal situation is provided where a south or west wall, with a border of this width, runs close to a wide garden path. The soil of the border may be taken out to a depth of eighteen inches, and drainage, consisting of a six-inch layer of broken bricks, should be placed in the bottom, and covered with soil composed of two parts of good loam and one part of mortar-rubble and broken brick, with a sprinkling of bone-meal. No organic manure should be added, but later on, when the trees are in full bearing, copious waterings with liquid manure will be beneficial. The soil should be made very firm after planting, and a mulch of light, strawy material will encourage root action and prevent the soil drying too quickly during harsh weather. The most reliable variety for outdoor planting is Brown Turkey; in addition, Brunswick and White Marseilles are well worth trying.

General Cultivation.—Every opportunity afforded by fine weather should now be taken advantage of to complete the manuring and digging of fruit plantations. Forking between and around the trees and bushes is beneficial in that it aerates the soil and provides a fine tilth for summer hoeing, the regular practice of which is an important factor in promoting healthy growth and minimising the evil effects of drought. An exception to forking the ground may be made in the case of Plums and Gages, whether orchard standards or trained trees on walls, for these are more fruitful if the ground around them is firm and hard, so that surface hoeing only should be practised.

PLANTS UNDER GLASS.

By J. Coutts, Assistant Curator, Royal Gardens, Kew.

Gloriosas.—The dry tubers of this climber should now be potted and started into growth in a temperature of 60° to 65°, taking care not to injure them, for they are very brittle. The Spider Lilies, as these are termed, are seen at their best if grown in fairly large pots; three or four flowering tubers may be placed in well-drained ten-inch pots containing a compost of three parts medium loam, and one part fibrous peat or leaf-soil, with enough sand to keep it open and porous. Water should be applied very carefully until the tubers have started into growth, and have made a quantity of roots. Gloriosas are often regarded as requiring stove treatment. While this may be true when they are making their growth, they will, when in flower, stand a greenhouse temperature; G. Rothschildiana may with advantage be treated as a greenhouse plant. The flowers will last longer and be richer in colour under the cooler conditions. Tubers may be started now in heat, or later on they may be grown under cooler conditions. G. Rothschildiana increases freely at the roots, while all Gloriosas may be raised from seeds.

Achimenes.—A quantity of the dry roots of this subject should now be started into growth in a house with a temperature of 60° to 65°; later on, others may be started in a lower temperature. They should be laid in boxes of leaf-soil and sand, and when they have made shoots from two inches to three inches in length, they should be placed three or four inches apart in pots or pans. The receptacles should be well-drained, while a fairly light compost, made moderately firm, will be suitable. As growth advances they should be gradually accustomed to ordinary greenhouse conditions. Achimenes, especially the more slender-growing varieties, are admirable for filling hanging baskets, A. coccinea giving better results if grown in this manner than if afforded pot culture. Achimenes are very subject to attacks of white-fly and Begonia rust, therefore they must be constantly watched. The occasional use of a sulphur vaporiser should prevent rust infection, while fumigating with hydrocyanic acid gas, or some other approved remedy, may keep the white-fly in check. Although there are many beautiful Achimenes worthy of general cultivation, A. longiflora and its varieties are most suitable for general decorative work.

Medinilla magnifica.—Of the many beautiful members of this genus, this is one of the most handsome, with its large drooping racemes of rosy-pink flowers, and noble foliage. Not the least of its merits is the fact that it may be flowered in quite small pots, while it may be grown into large specimens if so desired. It is easily propagated by means of cuttings, which root readily in a warm propagating case. Although it requires stove treatment, it will succeed in a much lower temperature, and plants that have been wintered in a temperature of 55° to 60° are now commencing to flower. Medinillas grow freely in a well-drained compost of light loam, to which may be added a little fibrous peat or leaf-soil, and clean, coarse sand.

THE FLOWER GARDEN.

By J. G. Weston, Gardener to the Duke of Devonshire, Chatsworth, Bakewell, Derbyshire.

Dahlias.—If it is desired to increase the stock of these plants, the tubers may be placed in heat to encourage the production of growths, which, so soon as they are sufficiently advanced to make good cuttings, should be taken off and inserted singly in small pots. Coarse, sappy shoots are useless for this purpose ; the firm and short-jointed growths are most suitable. These make by far the best cuttings and will root readily in light, sandy soil if the pots are plunged in a propagating case.

Bedding Pelargoniums.—As the days lengthen, these will soon commence active growth. If the cuttings were struck in boxes, no time should be lost before potting them into suitably sized pots. Use a light, open soil, and after potting place them in a warm house ; keep the plants close to the glass to promote firm and short-jointed growth. Very little water at the roots will be necessary for the first few weeks ; a light spraying overhead on sunny days will probably be sufficient until the roots become active. As the season advances, increase the supply of air, the main object being to build up strong, healthy plants that will flower better than if they had been forced into growth in a warm, close house. Although Pelargoniums are not relied on so much as formerly, under certain conditions very few bedding plants are more reliable or effective, especially where formal flower gardens are in vogue.

FOR NORTHERN GARDENERS.

By A. T. Harrison, Gardener at Jordanhill Training Centre, Glasgow.

Repotting Plants.—In the stove and warm greenhouse many plants require repotting at this season, and if a temporary bench can be erected in the house, the work may be more expeditiously carried out, especially if the potting shed is some distance away, and would necessitate the carrying of plants backward and forward, thus exposing them to the drying winds of March. Old plants of Crotons, etc., which have become leggy and have passed their useful stage, should be set on one side, and the best of the shoots selected as cuttings. Where a good propagating pit, with plenty of bottom-heat, is at command, these cuttings will soon take root, or the branches carrying the fresh tips may be cut half through at a suitable length and bound with Sphagnum-moss and a sprinkling of sand ; if they are kept sprayed and in a moist condition, the young growths will, in a few weeks' time, be ready for removal from the parent plant, and may be potted up. Flowering plants, such as Begonia Gloire de Lorraine and Coleus thyrsoideus, which have been in flower for several months and are now showing signs of fatigue, may be cut back and rested for a time, to enable them to produce cuttings next month. Climbing plants in the warmer houses may now be thinned and pruned, to allow the light to reach other occupants.

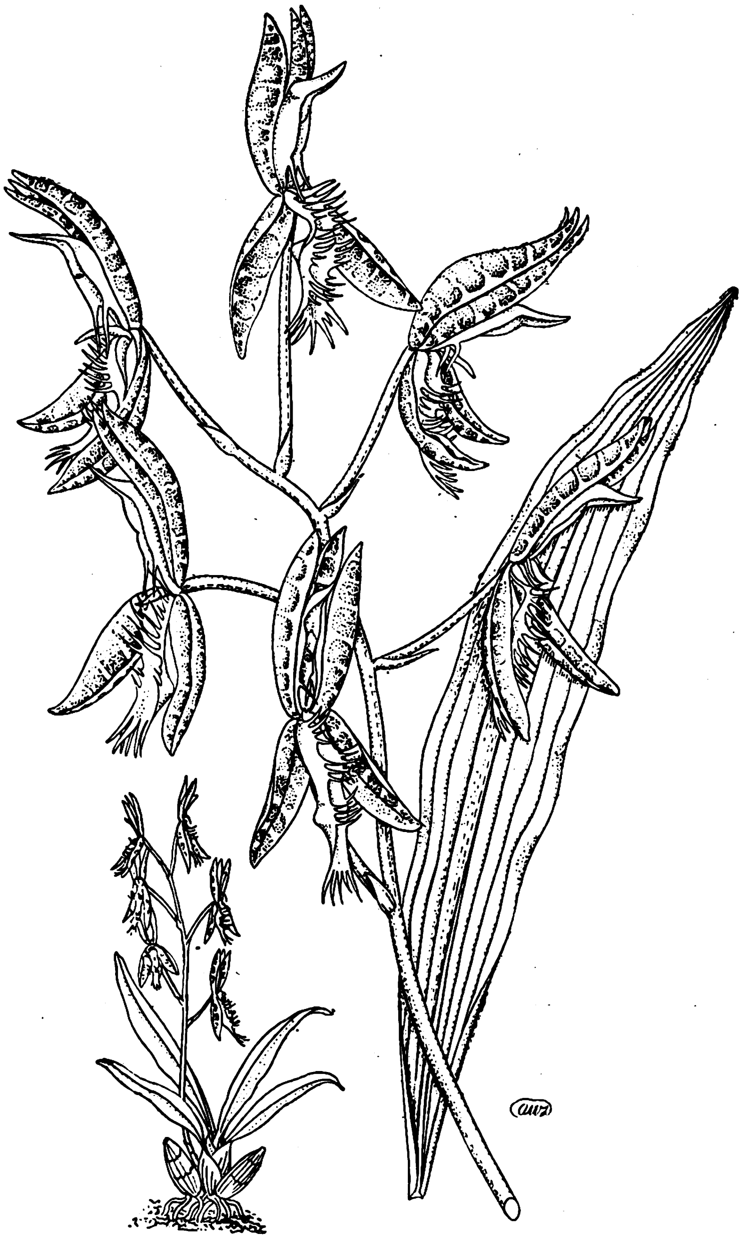

FIG. 75.—CATASETUM GARNETTIANUM.
(see p. 153).

Early-flowering Chrysanthemums.—Where the old stools of early-flowering Chrysanthemums were lifted and stored in boxes, they will now be producing large numbers of growths, which provide the best means of increasing these indispensable border plants. The cuttings may now be inserted, two to three inches apart, in boxes filled with sandy compost. If the boxes are set closely together in a closed vinery, the cuttings, if shaded, will soon root. So soon as this has occurred, they may be removed to cooler quarters, and gradually hardened in readiness for planting out early in May. If further supplies of any varieties are required, the old stools may be divided before being planted in the open, but these are generally later in flowering than the spring-rooted cuttings, while their flowers are usually of inferior quality. Many new varieties are now available, but for general effectiveness in the borders, such well-known sorts as Diana, Bronze Masse, Craigmillar, Elstob Yellow, Madame Marie Masse, Loan's Pink, White Masse and Sanctity, are difficult to beat.

Perennial Asters.—Where a border is devoted to these splendid, autumn-flowering plants, it sometimes happens that owing to pressure of other work, they are not divided and replanted so frequently as is necessary, with the result that the soil becomes impoverished, and the flowers inferior. Now is a suitable time to attend to them ; they should be lifted and divided and the old, worn-out centres of the plants discarded. When sufficient quantities of young growths of all varieties have been secured and labelled, the remainder of the plants should be lifted and set aside for planting later, in the wild garden, where they are most effective during late autumn. The border should be dug deeply or trenched, enriching it with well-decomposed manure as the work proceeds, and so soon as the soil is in good working order replanting may be proceeded with. The strong-growing varieties require plenty of room while the less vigorous kinds may be grouped near the front of the border.

ALPINE GARDEN.

ARABIS CAERULEA.

The species of Arabis in cultivation at the present time are not very numerous, and the colour of the flowers is usually, if not always, white. There are several species on the Alps of Europe with coloured flowers, and A. caerulea, perhaps, is the most interesting. It was introduced from Switzerland in 1793, but then apparently only the pale blue form, whereas there is a dark blue one in the wild state. The species also occurs on the French Alps, although not very abundantly. It ranges in altitude between 5,100 feet and 9,600 feet, and that may account for its dropping out of cultivation. High alpines are liable to suffer from the frequent freezing, thawing and rain during our winters.

A. caerulea is perennial, with a long and stout tap-root, and as it grows only from two inches to four inches high, it would be a highly interesting plant for the rock garden, provided it would endure our winters. At the same time it might be capable of hybridisation with some of the white-flowered species, and thus give rise to a hardier form, with flowers of shades of blue. *J. F.*

PRIMULA AURICULA BAUHINI.

Although a good many years have passed since I made a pilgrimage to Ingleborough, so that I might see for myself the famous cliff garden there, that was formed by the late Mr. Reginald Farrer, I can still recollect the beauty of a mass of Primula Auricula Bauhini, which was of surpassing effect, producing freely in its home on the cliff, its powdered, white-edged large foliage, and its fine flowers. Upon seeing it, together with other plants on the cliff face, I felt rewarded for my perilous traverse of the narrow path, a giddy height above the lake.

I lost no time in procuring a plant after my return home, and for years was charmed with the mealy, white-margined leaves and large trusses of silver-throated flowers that are much superior to those of the type. It is not difficult to grow, but evidently it prefers a crevice in the rock to any other position. It is by no means plentiful in nurseries and gardens, but the torrent of lovely introductions from the Far East need not blind us to the exquisite beauty of some of our European Primulas such as this plant from Mount Baldo. Like others of its class, P. Auricula Bauhini prefers limestone rocks. *S. Arnott.*

PRIMULA JULIAE AND ITS HYBRIDS.

Primula Juliae was first introduced from China in 1901 and, apart from its own considerable merit as a garden plant, has become the parent of a large and most interesting race of hybrids, with which it is my purpose to deal in these notes.

Primula Juliae is almost too well-known to need further description, its attractive, dark green, slightly crinkled foliage, and sheets of deep, rose-pink flowers being by now a familiar feature in most rock gardens. Sufficient to state that for continuity of blossom in a sunny, or even half-shaded and well-drained corner, its value cannot be overstated. I have been endeavouring for some time past, and with fair success, to gather together a complete collection of all the hybrids of this plant. The collection is not yet complete, unfortunately, but is quite representative.

Many of the forms closely resemble each other, and scarcely need a separate description, I shall, therefore, after describing those grown here, append a list of some of those which are in cultivation, but not in my collection. It rather tends to add to the general confusion that all these hybrids—or almost all of them—are fertile and, of course, do not breed true, so that new variations are constantly cropping up. A number of them are of good garden value, but there is bound to be considerable overlapping, and a percentage of little value.

The species and varieties of Primula which combined with P. Juliae to produce this race of hybrids cannot, I believe, be definitely set forth, but I am sure that many of them have the Blue Primrose as a parent, notably P. Juliana Gloria, P. Wanda, P. Hellenae and others with the deep, almost blue-red flowers. Then again the Oxlip strain is clearly shown in P. Dorothy, with its Polyanthus heads of pale yellow flowers, yet still retaining the Juliae leaf. I rather think that these two, namely, Oxlip and Blue Primroses, may, jointly with P. Juliae, be regarded as having produced the greater majority of these hybrids. They are very easily grown and flowered if given a fairly deep, rich soil, and will do equally well in sun or half-shade; but if in the full sun they need to be able to push their roots under a cool stone. Many a corner of the rock garden may be beautified for many months in the year by a group of one or other of these charming hybrids.

The length of their flowering season is phenomenal, and the largest-flowering of all is P. Juliana var. Gloria. It commences to open its glowing Primroses in November, and carries on well into the following May; indeed, it seems rarely out of flower. They are most of them not at all averse to a quantity of well-rotted cow-manure beneath them for their roots to reach down to; and show their appreciation in larger, better-shaped and finer-coloured flowers.

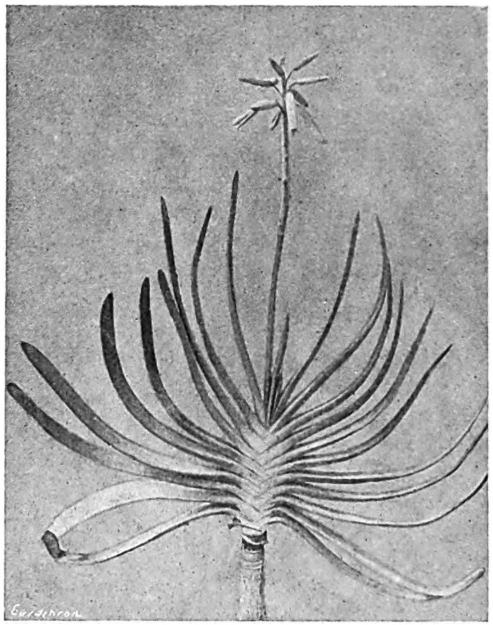

FIG. 76.—ALOE PLICATILIS.
(see p. 153.)

P. Ansoldii.—I have not grown this long enough to be very decided about it; it came here well recommended last autumn, and the early flowers which are just opening are a very good clear purple.

P. Crispii.—This is a good form, rather similar to Wanda and P. Juliana var. Gloria, although not having quite such a pure colour as the latter, and certainly not such a long flowering season.

P. Dorothy.—A very distinct form and an excellent plant for the waterside or for a moist place in the rock garden. Here I suspect the influence of Oxlip blood. The rather short, sturdy and crinkled leaves are distinctly those of P. Juliae, but the flowers are pale yellow and borne in Polyanthus-like heads on six- to nine-inch stems. It is wonderfully floriferous, and when well-established the plants will completely disappear under the masses of flowers. A group of this measuring some two yards square, which I saw last year in a near-by garden, was a sight to behold. It is very early-flowering and valuable in the early spring.

P. Icombe variety.—This is another very distinct form and one which is as yet scarcely in commerce. It has the habit of all these hybrids, with dainty Primrose-like flowers of clearest pink. It is, I believe, derived from P. Juliae crossed with a Primrose, and is certainly one of the best and should become popular when it is distributed.

P. Juliana var. alba.—Another presumable Primrose—Juliae cross, but this time with flowers almost white. When first open they are tinged with pink, but this flush disappears after the first day. It may not be quite so attractive as many of the others, but well worth growing.

P. Juliana var. Gloria.—To my mind this is the premier plant of all these forms. Its habit is more vigorous than the average, while the leaves are reminiscent of those of the Primrose, but darker and far sturdier. It commences to flower in November, and remains a blaze of glowing claret colour for months on end. The flowers are of good shape, size and substance, with a very pronounced eye of golden-yellow, surrounded by a circle of rich orange. It is the only form I know with this extremely fine central colouring. It is also, so far as my observations go, the only one of these hybrids which consistently refuses to throw occasional Polyanthus flower heads, especially towards the end of the flowering season.

P. Lingwood Beauty.—I think this is one of the few P. Juliae hybrids which may lay claim to a really pure colour. It is a deep, glowing red, quite innocent of any suspicion of blue. It is one of the best to grow and freest to flower, and should prove popular.

P. Merton Hybrid.—A good form, but not deserving special mention; it is rather more subject than most to the Polyanthus habit, and the colour inclines towards magenta.

P. Mrs. McGillivray.—I have not yet grown this form, but it is rather distinct and well worthy of description, so I include it here. The colour is a good salmon-pink, and the flowers are borne in Polyanthus-like heads consistently. It is very attractive, and makes a good companion for P. Dorothy.

P. Old Rose.—Quite a good plant, bringing to mind the Icombe variety, but neither of such good habit nor so pure a colour; it should, however, be included in the collection, as the colour is a decided break from the usual magentas, reds and purples, and should influence the seedlings and produce some good things.

P. Purple Splendour.—This was raised in a famous garden near here, and is a bold plant well worthy of its name. It is rather taller and more vigorous than the average, and the masses of purple-magenta flowers are freely produced in rather dense Polyanthus-like heads on nine-inch stems. A dangerous colour, but a valuable plant.

P. Wanda.—Perhaps the nearest of them all to P. Juliana var. Gloria, and unless compared side by side, almost equally good, yet when so seen it just lacks the grace and finish of that form, and its central eye is not so clearly marked. It is a plant for which I have a great sympathy, for it has so nearly escaped perfection, and now has to go through life in the humiliating position of second best to P. Juliana var. Gloria.

P. Violetta.—A form with flowers of an intense violet shade, rather more prostrate in habit than most, and very attractive; quite one of the best we grow.

P. Hellenae.—This is in colour almost midway between P. Juliana var. Gloria and P. Violetta. The flowers are on the small side but of very good shape, being rather more tubular than is usual with these forms, at least, when the flowers first open. The general effect is that of a stronger and much darker form of P. Juliae type.

This completes the list of those grown here at present; later, I hope the collection will be larger, when I may be able to write more about these beautiful and interesting plants. Below are mentioned a few which I know, but do not yet grow.

P. Juliana, Tucker's variety.—This came from the same seed-pod as P. Juliana var. Gloria. It is almost as good, with flowers a little smaller.

P. Hellenae var. Purpurkissen.—A continental form of P. Hellenae which is very free-flowering and of great charm.

P. Hellenae var. Jevel (Jewel).—Another continental form, and a very good thing indeed. *W. Ingwersen, The Birch, Sharpthorne, Sussex.*

HARDY FLOWER BORDER.

GERANIUM PLATYPETALUM.

ALTHOUGH often regarded as a form of G. ibericum, the subject of this note, frequently listed as a distinct species, has several features which differentiate it from the better-known plant In this garden, at any rate, no matter whether the site chosen be dry and poor, or damp and rich, G. platypetalum makes a mass of growth which is larger and bolder in every way than that of G. ibericum. That is to say, while the latter does not exceed eighteen inches when in flower, the former will rise to thirty inches at least, and that without any special culture. The foliage of G. platypetalum is also more copious, broader, and much more downy than that of its near relative. Moreover, while it seldom assumes any particularly attractive colour in autumn, the leaves of G. ibericum change to brilliant shades of crimson and orange-scarlet.

While admitting that there is a good deal of variability in the shade of the flowers in these species, the blush-purple of G. platypetalum always seems to be a brighter, cleaner tint than that of the other plant. Another point of difference appears to be the habit of growth, for while G. ibericum springs from gnarled and woody root-stocks, which often stand several inches above the soil, G. platypetalum starts from the ground-level after the manner of G. pratense. However, both plants are well worth a place among the best of the hardy Geraniums; although the flowering season is short, the blooms are large and make a fine and rich mass of colour. *A. T. J.*

FLOWER GARDEN.

ECCREMOCARPUS SCABER.

ECCREMOCARPUS scaber is mostly considered to be not quite hardy, and perhaps it is best so considered, for although it comes safely through the winter in many places in the open, there are many more gardens where it would not survive even if protected. One of the greatest troubles, perhaps the greatest, to guard against is a cold, heavy rooting medium. In such soil the root-stocks die off, in spite of being covered with ashes, but in a light soil there is practically no danger of loss, as I have proved over a number of years. The position of our plants faces south-east, and this half-hardy climber is planted in a narrow border amongst other permanent climbers which give all the necessary protection.

It has never failed for the last ten years to come up each spring quite healthily—sometimes a self-sown seedling showing as well. Even so late as the end of the first week in November, a few of the pretty flowers of this Chilian climber still greeted us. Seeds of this subject are plentiful, and where the plant is difficult to keep alive during the winter, young seedlings may be raised in spring under glass, or cuttings may be struck in a cold frame at the end of the summer, to make good any losses. *C. Turner, Ampthill Park Gardens.*

ORCHID NOTES AND GLEANINGS.

CATASETUM GARNETTIANUM.

So long ago as 1888 (December 15, p. 692), the late Mr. R. A. Rolfe described Catasetum Garnettianum in these pages, and a year later it was figured in *Bot. Mag.*, t. 7,069. This Orchid (Fig. 75) has, however, remained rare in collections, notwithstanding that "It is a singular and very elegant little plant." C. Garnettianum came from the Amazon, in North Brazil, in 1888, whence it was sent to Mr. P. F. Garnett, of South Bank, Grassendale, Liverpool.

The flowers are borne in racemes of four to nine, light green, freely blotched with chocolate-brown, and with a white, fringed or bristled lip. Catasetums are among the most interesting of Orchids, but they do not produce such large and brilliant flowers as the modern Laelio-Cattleyas, hence they have lost the popularity which they and Stanhopeas once enjoyed, and are now rarely seen, except in botanical establishments.

NOTES FROM GLASNEVIN.

VISITORS to the Succulent House are usually more interested in the weird and curious forms of the true Cacti, such as Cereus senilis, Echinocactus Grusonii, Mamillarias, etc., than in the succulent genera belonging to other families.

The South African Aloes, of which a considerable collection is grown, are intensely interesting to the lover of plants as well as to the botanist. They exhibit great variety in size and habit, both in the vegetative parts and in the flower. Many of them are highly ornamental when blooming and then become vastly more interesting to the ordinary visitor. Aloes have the advantage of being easily raised from seeds, and, in some species at least, of flowering while comparatively young. Unlike the so-called "American Aloe," which is rightly an Agave, they continue to flower for many years.

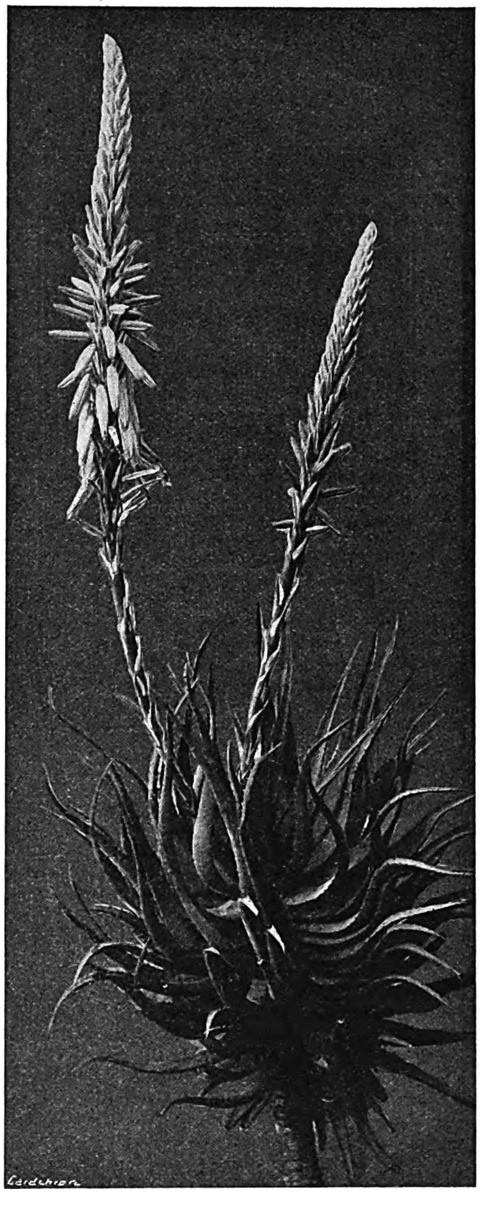

FIG. 77.—ALOE INSIGNIS.

At present Aloe capitata (A. cernua) is conspicuous on one of the side stages; this species has rigid green leaves, armed on the margins with brown, woody spines. They are borne at the summit of the stem, and from among them the scape or flower stem rises erect, bearing a head of pendulous lemon-yellow flowers with long, protruding stamens and reddish-brown anthers. The capitate inflorescence is typical of the section to which this species belongs.

Aloe insignis (Fig. 77) is distinct, with ascending leaves tapering to a spiny point, the marginal spines being rather unequal in size, while both surfaces are ornamented with whitish tubercles. The flower scape is furnished with conspicuous bracts, broad at the base, abruptly narrowed at the apex, striated, and with scarious margins. The raceme of flowers is over a foot long when the lower blooms are open, and continues to elongate. The flowers are rose-coloured in bud, but fade to greenish-white when fully developed; the contrast between the buds and the fully opened flowers is decidedly striking.

Aloe plicatilis (Fig. 76, p. 152) is an old, well-known species in botanic gardens. One old plant here bears many branches, candelabra-like, each with numerous pairs of glaucous, strap-shaped leaves at the apex. The racemes of flowers, produced on short scapes terminating the branches, are not unlike torches held aloft; the flowers are reddish-yellow.

Aloe Salm-Dyckiana is equally interesting, bearing long, acuminate, curved, glaucous leaves, that are armed with prominent spines on the margin. The flower scape bears a raceme of many bright brick-red flowers. Aloe Winteri is also flowering at the present time; the leaves are glaucous green, armed with spines of the same colour, and the flowers are coral-red.

In the cool temperate house many species of Acacia are showing flower, but the most conspicuous plant is an old specimen of Rhododendron arboreum, with pink flowers and silvery scales on the lower side of the leaves.

In the tropical stove house the most attractive flowering plant at present is Rondeletia cordata, with delightful corymbs of pink flowers, each with a yellow eye. The Rondeletias are excellent shrubs for the warm greenhouse or stove. Natives, for the most part, of South American countries, they are not happy in a cold house, but like a period of rest when the season's growth is finished. They should be lightly pruned when the flowers have faded to prevent the plants becoming too "leggy." Other good species are R. amoena, R. gratissima and R. odorata.

Daphne odora (D. indica), although occasionally grown outside in favoured localities, is only successful here as a greenhouse shrub, and flourishes best when planted in beds. Pot plants generally have a starved and sickly appearance and lack the healthy foliage of plants grown more naturally. Our best specimens are growing in a corridor connecting the propagating pits, and flower profusely. It is one of the parents of D. Dauphinii (D. hybrida), a hardier plant that is now flowering profusely in the open. Both may be propagated by cuttings of half-ripe shoots. *J. W. Besant, Glasnevin.*

GARDEN NOTES FROM SOUTH-WEST SCOTLAND.

THE Snowdrop—I write only of the common type, Galanthus nivalis, which seems to me without a rival in the genus—is notoriously capricious, running riot and spreading into far-flung sheets in some places (Fig. 74, p. 149), yet refusing to take possession of other woodlands where conditions of soil and climate seem practically the same. A native of central and southern Europe, it is strange that nowhere does it thrive more vigorously and increase more freely than on the wind-swept, rain-drenched, west coast of Scotland. Even there, however, there are places where all attempts to naturalize this fastidious plant have failed.

Those who have been disappointed with Snowdrops would probably fare better with the Spring Snowflake—Leucojum vernum—and its varieties Vagneri and carpaticum. These are also natives of central and southern Europe, but I have never known them refuse to take kindly to a British environment. L. v. Vagneri is superior to the type, flowering about a fortnight earlier (it began to bloom here this year on January 15), and carrying two or three flowers on a scape. Spreading in a woodland, their effect is much the same as that of Snowdrops, but the two should never be planted in company, the white of the Snowflake being more opaque than that of the Snowdrop, wherefore each should occupy its own colony.

Writing of colonies, none is more brilliant in this month of February than that which is peopled with the Winter Aconite—Eranthis hyemalis. Many persons have deplored failure in their attempts to establish it; failure which I think is owing to delay in buying tubers until autumn, when they are dry and brittle. They should be lifted so soon as possible after the foliage has withered and the seeds have dispersed, and planted straightway. I can never forget the charming surprise I experienced when hunting with the Cottesmore hounds. Our fox ran through a big wood at Stapleford, which was covered from end to end with a golden carpet of Winter Aconite.

Flowering simultaneously with the Aconite (this year it began on February 3) and providing an admirable contrast of colour, comes Scilla bifolia, the forerunner and harbinger of a long succession of Squills. It is not planted nearly so often as it deserves; one may go through scores of gardens and pleasure grounds without getting a glimpse of its clear blue blossoms, yet it is very easily naturalised. Less conspicuous, but of attractive colour and habit, is Symphytum grandiflorum (*Bot. Mag.*, t. 8,944), a lowly, but refined, member of the robust Comfrey genus. A native of the Western Caucasus, its bright red flower buds open into sulphur-coloured tubes of the regular Comfrey type; but it must be owned that the specific name, "grandiflorum," is the reverse of appropriate, for the flowers can only be considered "grandis" in relation to the six-inch stature of the plant. It forms a neat carpet in any half-shady border, takes care of itself, and continues a long time in bloom.

A good many seasons passed after Wilson introduced Rhododendron lutescens in 1904 before its merit as a flowering shrub was recognised. Lanky seedlings, putting forth a few pale-yellow flowers, offered but slight evidence of the character of the mature plant. Now, however, it must be welcomed as a conspicuous ornament of the woodland in February, lighting up the glades with a profusion of blossom. *Herbert Maxwell, Monreith.*

LE JARDIN DE JUSSIEU.

The New French Kew at Versailles.

It is well-known in France, and in other countries also, that the old Museum Gardens of Paris, many times reduced by the building of new galleries, have become much too small, while the atmosphere is affected by factories, and the soil has become worn out, consequently it is impossible to keep representative collections of plants, and especially of trees and shrubs, in a fair condition.

Over a long period requests were made by the Museum authorities to obtain, near Paris, extensive grounds for the establishment of a new botanical garden similar to those existing in many other countries. The hopes of those interested were realised in 1919, when a part of the extensive grand domain of Versailles, named Plaine de Cheireloup—formerly a royal hunting ground—was granted to the Paris Museum for this purpose. This area, at first about 300 acres in extent, has been extended recently to about 425 acres, and named "Jardin de Jussieu," in memory of the great botanists who elaborated in the Trianon gardens, near by, their *Genera Plantarum*.

The landscape has been traced—with the assistance of M. D. Bois—by M. Chaussemiche, a former architect of the Palace, in the geometrical style, in accordance with that of the park and the two Trianons, which the new garden faces on its southern side, and each part will be devoted to special kinds of plants.

In the centre will be a big bed of oval shape, 1,500 feet long, designed in irregular style, with a pond that will be filled with flowering and aquatic plants. The Rose garden will cover eight acres, and florists' plants sixteen acres. and the Arboretum and Fruticetum have been allowed an immense space extending to 200 acres. The fruit garden will cover about twenty acres. There are also smaller spaces reserved for a Fernery, a rock garden, economic and pot-herbs, a water garden, a nursery, etc. A big Chinese tower will be erected near the Porte St. Antoine, from the top of which the view will extend over the whole garden, the Park of Versailles, the Trianon and the suburbs.

Many trees and shrubs have already been obtained, most of them having been presented by the leading scientific establishments and nurserymen of France, with others from abroad, and especially from Kew. In 1925, 350 species or varieties of Conifers, 1,200 species of other trees, 2,500 species or varieties of shrubs, and 350 of Ericaceous or peat-loving plants, were collected, and these figures have been increased greatly since then. Some have been planted in their proper places, but most of them are still in nursery beds awaiting the time and money to transfer them to their quarters.

One of the immediate benefits of the opening of the Jardin de Jussieu has been the saving of the collection of Pear trees of the Chartreux which was in being so far back as 1650. This unique collection of very ancient varieties was first saved by André Thouin, after the revolution of 1789, when the religious order of the Chartreux was abolished, and planted in the Museum gardens in 1824. This invaluable collection, the full history of which has been published by M. D. Bois,* still contained in 1888, eighty-seven varieties out of the 102 named in the *Catalogue of the Chartreux*, printed in 1775.

The old varieties and a number of more recent ones since added, have been grafted lately on young stocks, making a total amount of about 325, which are now planted in the Jardin de Jussieu, in the part devoted to fruit trees. It may be added that the great iconographic work (seven volumes) *Le jardin fruitier du Museum*, published by Decaisne, in 1871, was mainly founded on this collection of fruit trees.

Similar work was carried out last year with regard to the collections of plants remaining in the old nursery at Rue de Buffon, on which new galleries are now being erected to provide room for the zoological collections of the late Prince d'Orleans.

The establishment of such an extensive garden will need not only time and much preparation, but the expenditure of a large sum of money, both on plants and upkeep. Unfortunately the financial state of France makes it very difficult to obtain sufficient credits, consequently the Directors are obliged to proceed very slowly.

Before bringing this short note to a close I may refer readers who are especially interested in this garden to the *Revue Horticole*, in which they will find many notes published in the year 1924, and in the year 1925 (p. 364), a complete history with a large plan. *S. Mottet.*

DAMAGE DY FROST AT LA MORTOLA.

After a prolonged summer drought, the late autumn rains and mild weather in early December promoted luxuriant growth that was ill-fitted to withstand the unusual conditions that occurred on December 18 last after a fall of sleet, when the temperature fell to 6°C. below zero. While some plants were only slightly damaged, others were killed outright, and comparing this list with that of the plants in flower (p. 104) it will be noted that some remain unhurt. After a careful study of the reasons for this difference, apart from air currents and five inches of snow, it is clear that the greatest damage was done where the sleet saturated the foliage, for plants of the same kinds growing in a dry spot and sheltered under Cedars or Acacias were unhurt.

The following list of damaged plants may be of use as a guide to those requiring the most sheltered corners :—

Acanthus arboreus and A. mollis; Achania mollis, Agave attenuata, A. caespitosa, A. flaccifolia, A. regina and A. Willdingi; Agathea petiolata, Ageratum mexicanum, Aloe comosa, A. affinis, A. abyssinica, A. arborescens, A. Brunthaleri, A. ciliaris, A. Dyeri, A. grandidentata, A. ferox, A. Hanburyana, A. lateritia, A. plicatilis, A. percrassa, A. Pienardii, A. Salm-Dyckiana, A. Simii, A. supralaevis, A. Strausii, A. Wickensii, A. mortolensis, A. rubroviolacea and A. sessiliflora; Anona Cherimolia, Argyreia speciosa, Arundo Donax and Ardisia latifolia.

Begonia fragifolia, B. macrophylla, B. manicata, B. miniata, B. semperflorens, B. Rex and B. weltoniensis; Billbergia nutans, Bougainvillaea glabra, B. Sanderiana, B. spectabilis and B. s. lateritia; Bouvardia coccinea, Bryophyllum crenatum, Buddleia madagascariensis and Bulbine alooides.

Caesalpinia tinctoria, Calendula officinalis, Calodendron capense, Cantua buxifolia, Carica Papaya, Casimiroa edulis, Caralluma sp., Cedrela sinensis, Celtis caucasica, Celastrus arbutifolius, Cestrum aurantiacum, C. lanatum and C. nocturnum; Chlorophytum elatum, Chrysanthemum frutescens, Cineraria stellata, Clivia miniata, Colocasia antiquorum, Colquhounia vestita, Convolvulus floridus, Cordia Francisci and C. serratifolia; Cotyledon macranthum and C. orbiculare; Crassula rosularis, C. lactea, C. portulacea, C. perforata, C. lycopodioides, C. perforata, and C. conjuncta; Cussonia triptera, Cyperus alternifolius and C. Papyrus, and Cyphomandra betacea.

Dahlia Maximiliana, Datura arborescens, D. chlorantha and D. sanguinea, Dimorphotheca Ecklonis, Dombeya Cayeuxii and D. Wallichii; Draceana Draco, Dunalia cyanea, Duranta Plumieri and D. inermis.

Echeveria gibbiflora and E. multicaulis; Echium callithyrsum, E. fastuosum and E. formosum; Erythrina Crista-galli, E. insignis and E. viarum; Eucalyptus Globulus and E. citriodora; Euphorbia abyssinica, E. balsamifera, E. Regis-Jubae, E. Bojeri, E. erythrantha, E. grandidens, E. splendens and E. Tirucalli.

Ferdinanda eminens, Ficus comosa, F. laevigata, F. macrophylla, F. religiosa, F. Roxburghii and F. scabrifolia; Fuchsia arborescens and F. triphylla; Furcraea Selloa.

Grevillea Thelemanniana, G. robusta and G. Banksii, and Gynura aurantiaca.

Hebeclinium ianthinum and H. macrophyllum; Hardenbergia Comptoniana, Hedychium Gardnerianum and H. carneum; Heliotropium peruvianum, Hexacentris coccinea, Hibiscus Rosa-sinensis and H. splendens.

Iochroma coccinea, I. grandiflora and I. lanceolatum; and Ipomoea Leari.

Jacaranda ovalifolia, Jasminum officinale, and J. nitidum.

Kalanchoe marmorata, and K. somaliensis; and Kleinia Grantii, K. ficoides, K. Galpini and K. neriifolia.

Laburnum anagyroides, Lavandula abrotanoides, Lantana Camara and L. lilacina; Lippia citriodora, Lycium cestroides and Lotus peliorhyncus.

Mesembryanthemum confertum, M. aequilaterale, M. multiflorum, M. rubricaule, M. serrulatum, M. verruculatum, M. echinatum, M. deltoides, and M. pulchellum; Monstera deliciosa, Montanoa tomentosa, M. bipinnatifida and M. Wercklei; Musa Basjoo, M. Ensete and M. paradisiaca; and Muehlenbeckia complexa.

Odina caffra, Olmediella Betschleriana and Oxalis cernua.

Pelargonium hybridum, P. athamanthoides, P. inquinans, P. lateripes, P. gibbosum, P. heterogamum, P. Radula, P. roseum, P. peltatum, P. tomentosum, P. scandens and P. zonale; Periploca graeca, Phytolacca dioica, Pilea microphylla, Primula kewensis and P. sinensis, Pithecoctenium buccinatorium and P. muricatum, Pontederia cordata, Podranea Picasoliana, Psidium Araca and Pteris longifolia.

Reinwardtia trigyna, Reseda odorata, Richardia africana, and Rosa Banksiae.

Salvia albo-caerulea, S. amarissima, S. angustifolia, S. elegans, S. Heerii, S. mentiens, S. Sessei, S. involucrata and S. leonuroides; Schefflera Stelzeriana. Satureia viminea, Sedum linearis, Sempervivum arboreum, S. Berthelotianum, S. canariense, S. chlorochrysum, S. cuneatum, S. decorum, S. giganteum, S. holochrysum, S. hybridum, S. Mauriqueorum, S. urbicum, S. velutinum, S. Webbianum, S. Youngianum, S. balsamiferum, S. Haworthii, S. glutinosum and S. marginatum.

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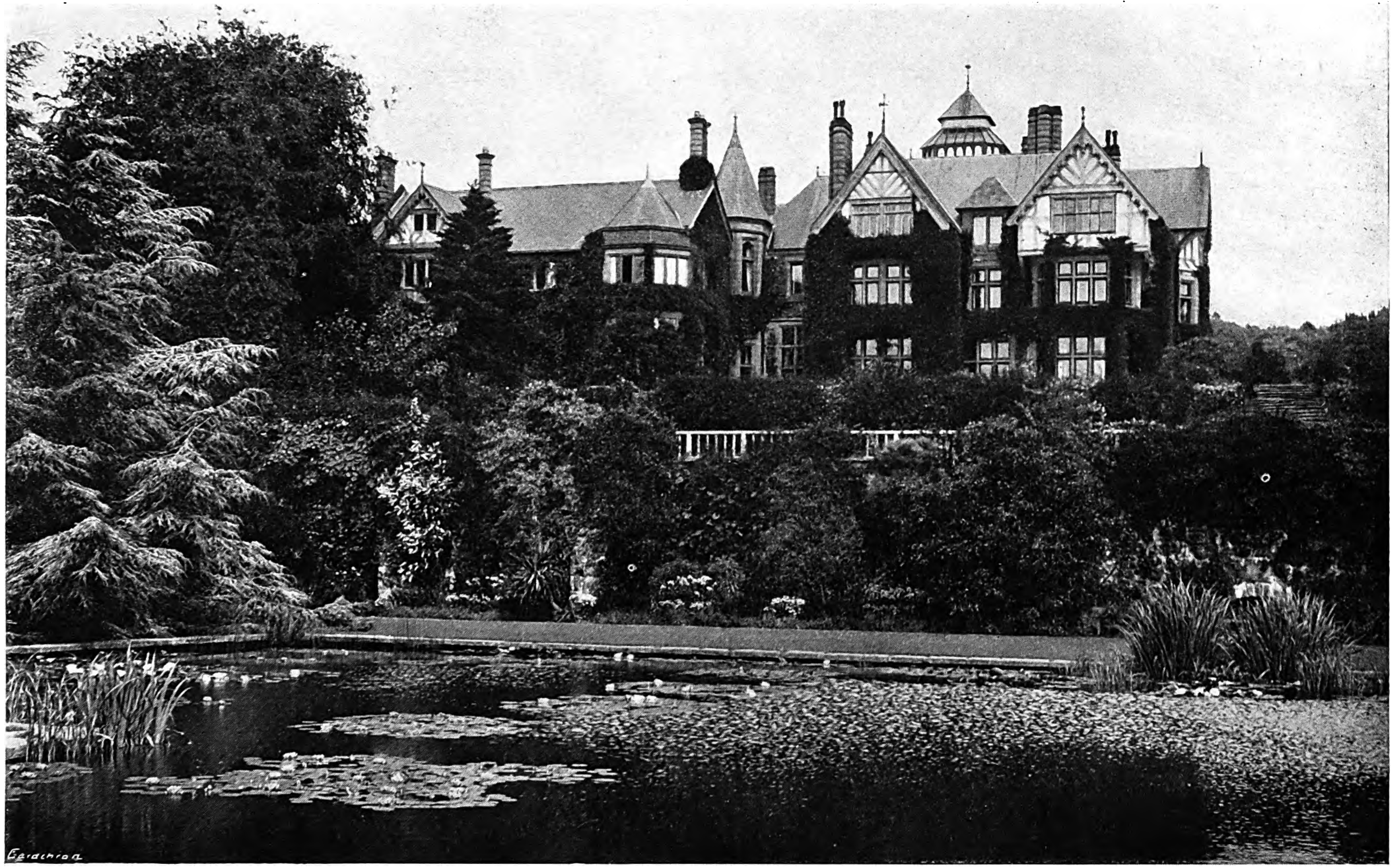

BODNANT FROM THE LILY TERRACE.

Senecio angulatus, S. grandifolius, S. hadiensis, and S. Petasitis; Solandra grandiflora; Solanum aviculare, S. acanthocarpum, S. auriculatum, S. cyananthum, and S. Warszewiczii; Sonchus Jacquini, Statice fruticans and S. brassicaefolia; Stapelia Hanburyana and S. variegata; Stenolobium alatum and S. stans; Strelitzia Augusta and Streptosolen Jamesonii.

Tacsonia manicata, Tetrapanax papyrifera, Tropaeolum majus, Tecomaria capensis, and Toddalia lanceolata.

Verbena officinalis, Vitis quinquefolia and V. Voinieriana.

Wigandia caracasana and W. urens.

Zebrina pendula and Z. tricolor.

RHODODENDRONS.

Among hardy, evergreen shrubs none are easier to plant successfully than Rhododendrons. The masses of fibrous roots are matted so closely together that quite small plants lift with good balls of soil. Except when the plants are in flower, and from May to August—when we look for sunny and dry weather—the transplanting of Rhododendrons may proceed unhindered. The generally accepted practice, and a good one for most evergreens, is to avoid removal from November to March, but Rhododendrons are the most important exceptions. With care in lifting the plants with good balls of soil around the roots, they transplant very successfully in mid-winter, without the loss of a single leaf. Such work may continue through February and March until the flower and leaf-buds commence to burst. An important proviso is that the bushes must be well-watered so soon as transplanting is finished, and plenty of water should be given during the ensuing summer.

The seeds of Rhododendrons are so fine that comparatively little, if any, covering is required after sowing them. A dusting of fine silver sand is, perhaps, worth while. Never before in the long history of gardening has so much attention been given to the raising of Rhododendrons from seeds, and this is very largely—almost entirely—due to the enthusiasm for new shrubs, and the sending home by collectors in China of hundreds of packets of seeds, principally of Rhododendrons. Plants raised from the earlier-collected seeds have long since reached the flowering stage, and home-collected seeds are being freely distributed among enthusiasts.

Several kinds of material are being used very successfully for seed-sowing, *i.e.*, peat, peat-moss, moss alone, sandy loam, and a mixture of smashed crocks and leaf-mould. I believe the close, moist conditions have as much or more to do with successful germination than the compost itself. If the pots or pans are soaked with rain-water a few hours before sowing the seeds and, when filled, are placed in a moist, heated greenhouse or pit, covering them with pieces of glass and sheets of paper, no more water will be required until after germination takes place. Then, for the first few weeks, water should be supplied from below, by standing the pots in pans of water.

The first or second week in March is a good time for sowing Rhododendron seeds. With brighter and longer days germination is quicker, and the growth of the tiny seedlings more rapid, than from January or early February sowings. This is especially noticeable in the London district.

However much we may extol the advantages of layering as a means of propagating Rhododendrons in preference to grafting, the fact remains that as an easy and rapid method of increasing the large-leafed hybrid Rhododendrons in quantity, grafting must take a prominent place. The two methods generally favoured are saddle-grafting and side-grafting, with a decided preference for the first, when the stock and scion are of similar size. Grafting should be low down so as to leave as little opportunity as possible for suckers to develop on the stocks.

For convenience in handling, it is usual to grow the stocks for some time previously in pots, and after grafting place them in a close propagating frame, preferably with slight bottom heat, until the union is made. Rhododendron ponticum is the most satisfactory species to use as a stock.

The mild weather experienced recently has favoured the development of the early-flowering Rhododendron species and hybrids. Among the deciduous species, R. mucronulatum, with rosy-purple flowers, has been very conspicuous for a month or more. R. Nobleanum still holds first place in popularity as an early-flowering, large-leafed evergreen. R. praecox is also a most useful February-flowering, evergreen shrub.

Among the Chinese species, R. sutchuenense and the variety Giraldii, with a large blotched flower, are particularly attractive. R. praevernum is a very distinct evergreen bush of low, close growth with trusses of white flowers. Distinct and pleasing also are the pink and white forms of R. moupinense. *A. Osborn.*

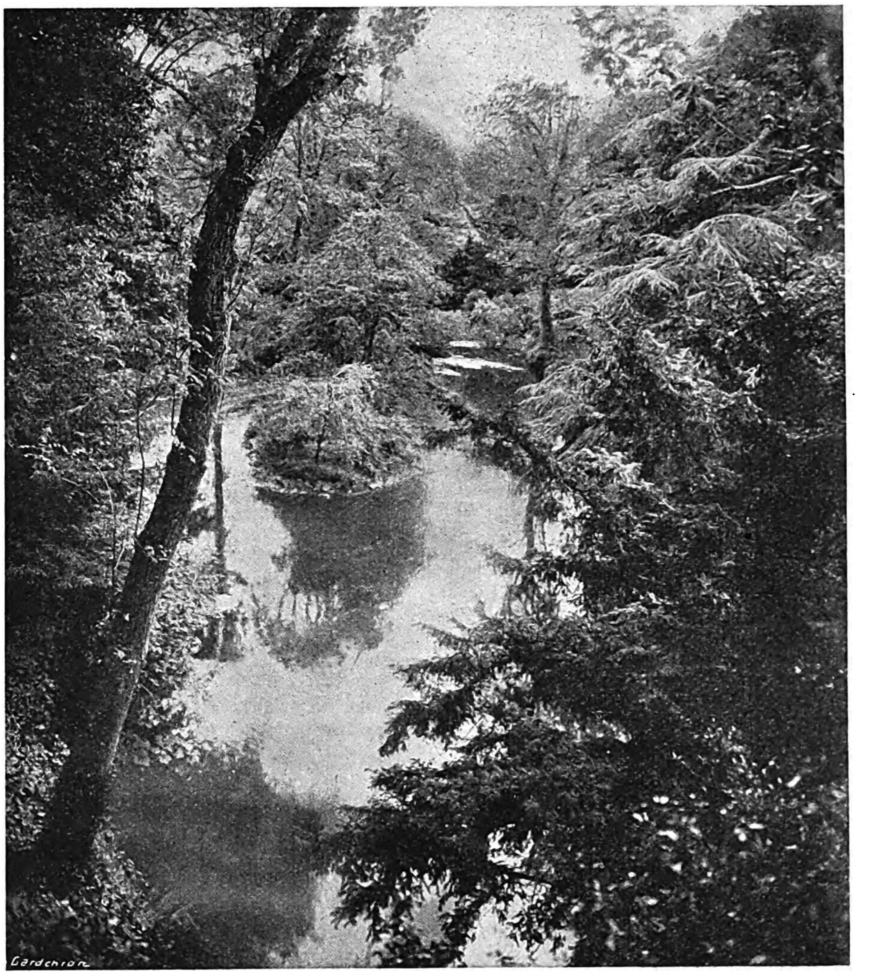

FIG. 78.—BODNANT: THE DELL.
(see p. 156).

TREES AND SHRUBS.

SORBUS ARRANENSIS.

The above name has been given to a small tree occurring in Glen Catacol, Arran, Scotland. It would appear to have been confused with Sorbus fennica, which also occurs in the same glen, for it is not mentioned in British floras, although the last named was recorded and described from that locality. Dr. Hedlund is responsible for the name, and reduces all the species of Pyrus to Sorbus, except the groups that include Apples and Pears. The leaves are small, narrow, and may be compared with those of S. minima, discovered and described by the Rev. A. Ley on Craig Cille, Brecon. The lobes of the leaves of S. arranensis are narrower and generally more gradually narrowed to the point than in the Welsh plant. The lowest pair of lobes are also the most deeply separated from the body of the leaf, whereas in S. minima the deepest are about the middle of the leaf. This last character also applies to S. scandica, to which S. minima has been compared. The fruit of the Arran plant is oval, but that may be because my specimen was gathered in July when the fruits were immature, whereas those of S. minima are globular in July and August when grown in England or Wales. Both these small-leaved species of Sorbus are sufficiently graceful and elegant, especially when in fruit, to be grown in shrubberies and pleasure grounds. *J. F.*

HEDYSARUM MULTIJUGUM.

Shrubs that flower during summer and early autumn are not so numerous as one would wish them to be, for which reason H. multijugum should not be omitted when additions are being made to the shrubbery.

It is a deciduous shrub, forming a straggling bush from three feet to four feet high, having alternate, pinnate leaves, about six inches long. The racemes of Pea-shaped, rosy-purple flowers are produced from the axil of each leaf as the shoot grows, and are borne on stems six inches to nine inches long.

Hedysarum multijugum, which is said to inhabit dry regions in Mongolia, should be planted in a moderately dry, sunny situation, in good loam. The straggly habit may be corrected if the lower branches are pegged down as layers; they will break freely into fresh growth and furnish the base of the plant. It makes a welcome addition to the hardy shrub border, for it flowers continuously with the greatest freedom from June to September, although some may object to the colour, which to others is quite pleasing. *R. Findlay, Wisley.*

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BODNANT.

No garden is ever finished. Even when new plants cease to arrive, old plants die, or change, and everywhere trees and shrubs continue their growth, slowly altering year by year both their own appearance and that of their surroundings. Therefore, one may say that the garden is never static; either addition and growth exceed decay, so that the garden soars to even greater heights of beauty, or in the course of a mere brute struggle for existence, between plant and plant, it reverts gradually to the wilderness.

But after fifty years of planting and planning, Bodnant, begun by the late Mr. H. D. Pochin, Lady Aberconway's father, in the seventies, though virile and progressive, may be called a mature garden. One need only look at the stately trees, the Oaks and Beeches which flank the west terrace, the Lawson Cypress and Irish Yews—green towers whose slim height beautifully balances the long, horizontal lines of the south terrace—with the wide sweep of the lawn beyond, to realise that. Even the high terrace walls, already smothered beneath a rich array of singular and rare half-hardy shrubs—hardy in this soft ocean air—suggest permanency; although the south terraces, designed by the Hon. H. D. McLaren, are barely twenty years old.

Bodnant, the home of Lord and Lady Aberconway, stands on the shelf of a hill surrounded by woods, a few miles up the Conway Valley, towards which the ground falls abruptly, allowing a fine view over terraces and trees to the ranges of Snowdonia. Behind, the wooded hill rises high enough to afford full protection from north to east; and in front, the Dell (Fig. 78), a deep, warm, tree-girt gash in the hills, down which a rushing stream drops swiftly to the Conway, and divides the main garden from the rest of the estate. Beyond the Dell, the hill rises nearly three hundred feet to a point whence the whole vale of Conway, backed by the hoary Cambrian mountains, comes into view, with an almost sheer drop to the river; the wilder parts of the estate, where not timbered, are covered with sheets of Bluebells and golden Gorse.

The terrace gardens are, of course, mainly formal, but the charm of Bodnant lies much in the natural ease of transition from the formal to the informal, and from the informal to the wild. Even the hanging gardens of Babylon could scarcely exceed the western terraces in magnificence, and certainly not in interest. Here, against the lofty, buttressed walls, grow treasures brought from every temperate climate on the globe; not singly, but in teams; not stunted or juvenile, but full-grown, and in mature splendour.

Magnolia Campbellii, for example, is nigh thirty feet high, rising head and shoulders above the wall, and bears each year flowers as large as Water Lilies. Corokia virgata, diced all over with twinkling yellow stars, forms stout bushes, and there are many bushes of Tricuspidaria lanceolata. The Chilian Fire Bush, Embothrium coccineum, looks over the top of the wall and greets the early riser peering from the west windows, while the evergreen Magnolias, M. Delavayi and M. grandiflora, Solanum crispum, Calceolaria violacea, Olearia nummularifolia and O. myrsinoides, Ceanothus Veitchianus, Buddleia Colvilei, Camellia reticulata, and Hydrangea quercifolia, are merely a few of the plants found here.

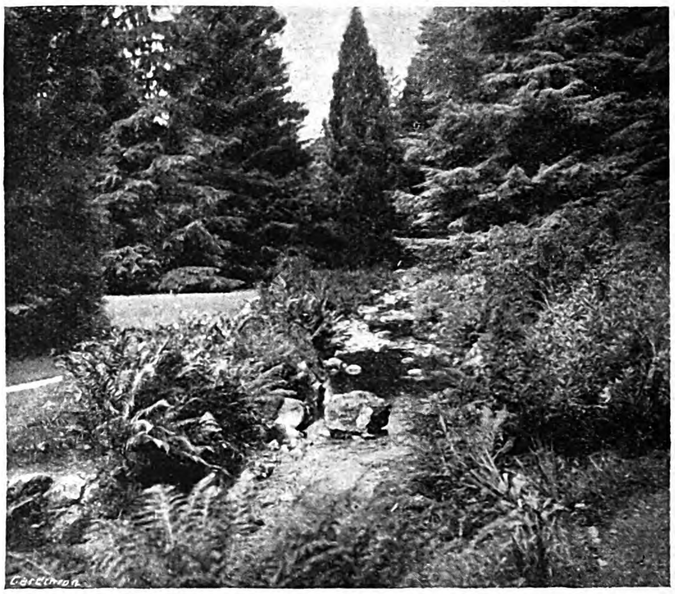

FIG. 79.—BODNANT: VIEW IN THE PINETUM.

On the topmost terrace, which is stone-flagged, cushions of Lithospermum prostratum, spongy tuffets of dwarf pink Phlox, and shaggy Saxifrages grow amongst the flag-stones and spill over from the Tulip beds in rivulets of colour.

Lower down is the Water Lily terrace which is depicted in the Supplement Plate accompanying this issue. It is approached directly by flights of steps flanked with Strawberry Trees, or indirectly by paths through the gardens on either side; the buttressed walls increase in height as one descends, and the tiers of terraces with their ponds and pergolas, and the walls, curved or straight, with their fountains and balustrades, shelter an immense variety of plants. Always there is something new, and a tour of the walls will reveal such plants as Eucryphia pinnatifolia and E. cordata, Desfontainea spinosa, Romneya Coulteri, Abutilon vitifolium, Olearia macrodonta, Osmanthus Delavayi, and Rosa sino-Wilsonii. Over the balustrades hang Vines and Clematis, Wistarias, including the sweetly-scented white-flowered W. venustum, and a fine plant of Rosa omeiensis pteracantha, that is skilfully set to catch the western sun through its wing-like, blood-red, translucent thorns. A clipped Yew hedge, four feet high and four feet thick, is a feature of the middle terrace.

The dominant note of the south terrace is spaciousness. Along the house wall are big bushes of Ceratostigma Willmottiae, Fendlera rupicola, and the rare Weinmannia trichosperma; and climbing the wall itself is the yellow-flowered Sophora tetraptera. Against the low wall of the south terrace, which looks out on to a wide expanse of level lawn, with an undulating park, are Pittosporum tenuifolium nigricans, Berberis Fremontii, Abelia floribunda, and shrubby Senecios, with Cydonia japonica clambering along the balustrade.

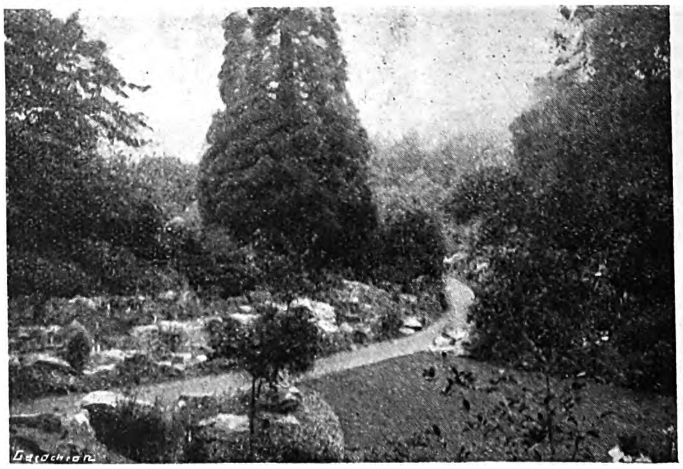

FIG. 80.—BODNANT: RHODODENDRON ROCK GARDEN.

Looking southwards towards the park that is dotted with fine old trees, the dark spires of Lawson's Cypress are seen against the grey latitude of the terrace on the left, and a great bank of chromatic Azaleas and other flowering shrubs is seen on the left front; behind that are big bushes of Garrya elliptica, Pernettia mucronata, and Berberis Darwinii.

To the right is a terraced hollow with a pond at the bottom; the circular walls of this are covered with Rhododendrons, including some species of the soft 'Maddeni' series. Here are firm underbushes of R. callimorphum pink, R. bullatum white, R. sperabile blood red, and the pretty, aromatic-leafed R. sphaeranthum, with clot-like heads of white flowers. Against the wall are splendid flowering plants of R. Lindleyi, R. Edgworthii, R. assamicum and others. An Embothrium, not quite so fine as the one on the big terrace, also grows here. Further down the slope, over which Beech trees spread their shade, is the Rhododendron rock garden (Fig. 80), where are grown all the dwarf Rhododendrons, and a great variety of American and other Lilies—such as Lilium pardalinum, L. columbianum, L. Humboldtii, L. japonicum, L. Willmottiae, L. concolor, L. Parryi, L. parvum, and L. Roezli; while amongst the Rhododendrons are R. glaucum, R. oreotrephes, R. rupicolum, R. fastigiatum, R. calostrotum and R. Williamsianum, also Azalea amoena. Other plants here which attract notice are Ledum Parryi, Menziesia ciliicalyx and the very rare and charming M. purpurea, a red-flowered Clintonia from California, Erythroniums and Primulas.

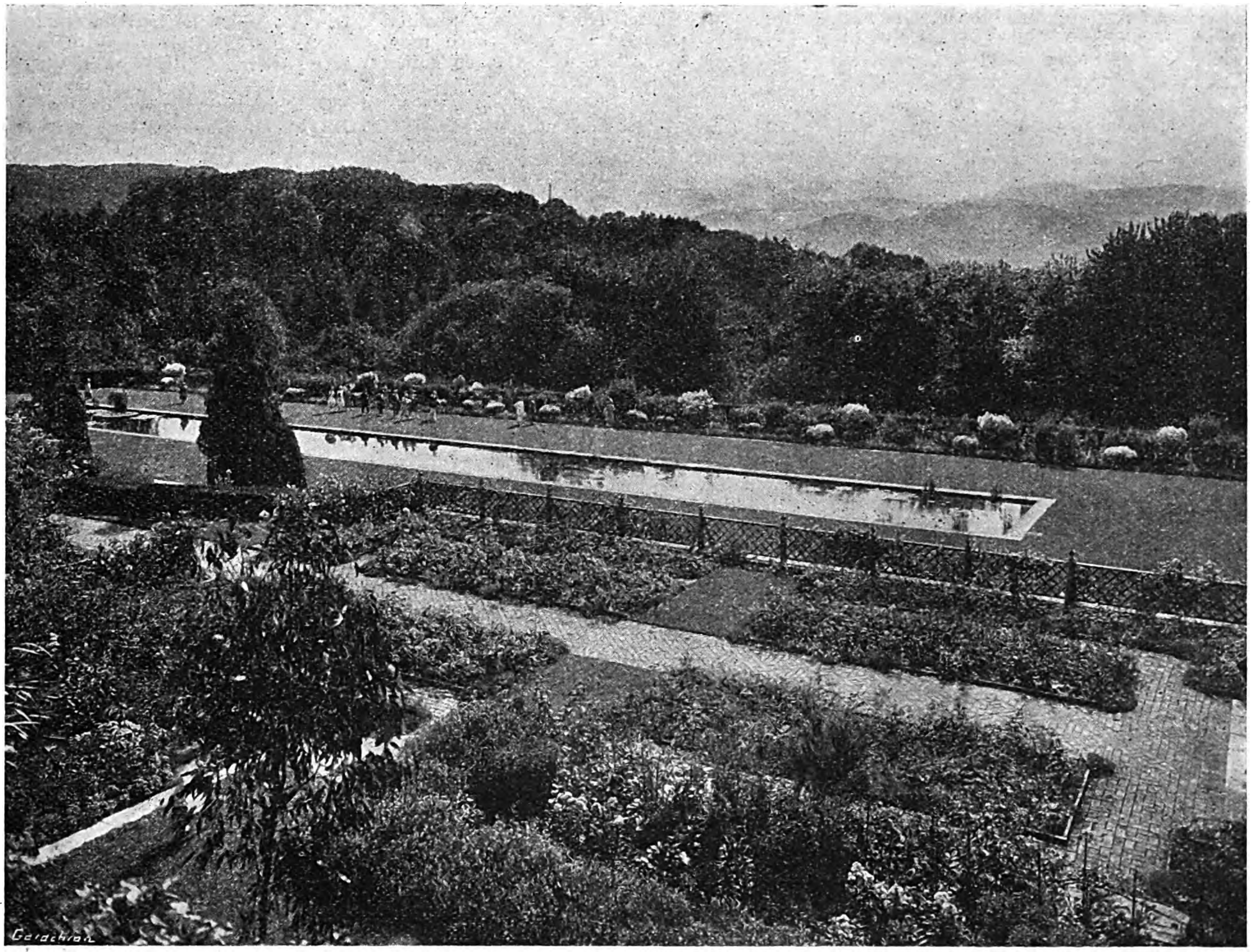

FIG. 81.—BODNANT: THE ROSE GARDEN AND CANAL TERRACE.

From the rock garden we descend steeply into the glen, that is shadowed by great trees, and find the tumbling waters of the brook lined with hosts of uncommon and beautiful flowers; below this is the Dell.

Skirting the western side of the terrace garden beneath a fine Cedar, the ground slopes down gradually through a belt of massed Azaleas and Eucryphias. Here are several remarkable trees, such as the red-leafed Acer palmatum, twenty feet high and as much through (it is fifty years of age); a Judas Tree, and a Tulip Tree.

Just below is a small satellite rock garden, within the terrace orbit, where many interesting plants are seen. Springing from the walls are Primula Forrestii and P. redolens, Pentstemon Davidsoni and P. cristatus, Saxifraga longifolia and Anthericum Hookeri. Alongside grow Lewisias, Dodecatheons, Heucheras, Paeonies, Eremurus, the stately Allium Rosenbachianum, Iris japonica, and Aethionema jocunda. There is also a carpet border of Gentiana acaulis, and a good specimen of the Anchor Plant, Colletia cruciata.

Still skirting the terraces, but turning along the base, below the Canal Terrace (Fig. 81), we come to Magnolias and Lilacs against a woodland background. Most of the Magnolias are of flowering age, and the collection includes a large variety of species and hybrids, one of the most interesting being M. conspicua elongata. Here also is Quercus pedunculata purpurascens.

Ascending along the margin of the terrace again, we find sheltered beds, concealed amongst the hedges, containing species of Primula and Meconopsis, amongst the latter being M. Baileyi, M. quintuplinervia, M. Pratii, M. Wallichii, M. paniculata and M. robusta; while the pretty little Welsh Poppy, M. cambrica is, of course, a weed.

Below the Terrace garden is the Dell. Contoured paths high up on either side of the stream pass through beautiful sylvan scenery, and permit a view of the trees below; hundreds of Rhododendrons are planted here.

To descend into the Dell, we may follow down the deep glen, through massed bands of brightly-coloured Primulas, such as P. pulverulenta, P. burmanica, P. helodoxa, P. Bulleyana, and P. anisodora, with first-rate hybrids like Red Hugh. Lower down are clumps of P. Veitchii, P. Mooreana, P. latisecta and others, with Meconopsis, Saxifragas, Campanulas, Anemones, Irises and many other rock plants. Flaring bushes of Rhododendron add still more vivid colour in bulk.

The Dell, which is the valley of the Hiraethlyn a stream flowing to the Conway, is one of the great features of Bodnant, and is planted with magnificent specimen Conifers and other trees (Figs. 79 and 83), amongst notable examples being Cedrus atlantica glauca, Sequoia (Wellingtonia) gigantea, Abies grandis, A. bracteata, A. brachyphylla and A. cephalonica, Pseudotsuga Douglasii, Cryptomeria japonica, and a particularly fine example of the Japanese Umbrella Pine, Sciadopitys verticillata.

Other trees include the largest specimen in the country of the prickly-barked Acanthopanax ricinifolium, planted in 1894, and now about fifty feet high; the weeping Himalayan Pine, P. excelsa; Abies Pinsapo var. glauca, and a number of interesting Japanese Coniferae.

Hybrid Rhododendrons, Azaleas, and Himalayan species clothe the precipitous banks of the Dell. Foremost amongst the hybrids is R. Loderi King George, and amongst the older species, R. Falconeri; Chinese species are also being planted here. At the upper end of the Dell is a large pond.

Ascending again by another glen, where there are some magnificent plants of Rhododendron Coombe Royal, R. Loder's White, and other sumptuous hybrids, we reach the Quarry, a picturesque cliff recently reclaimed for horticultural purposes, and now thickly planted with Chinese Primulas amidst a profusion of Rhododendrons. Amongst the latter are to be found not only almost every Chinese, Himalayan or American species introduced into this country; not only every first-rate hybrid, but great numbers of all the best. From such a limitless gallery of beauty it seems bathos to select half-a-dozen, such as R. yunnanense, R. Roylei, R. Augustinii, R. Keysii, R. Fargesii, and R. auriculatum, for mention.

Another collection of hybrid Rhododendrons is to be found near the main entrance, at the top of the drive. Here one sees Gill's Crimson, Luscombe's Scarlet, Standishii, Loder's White, and kewense hybrids; and just beyond this thicket is a collection of Barberries which in autumn are a mass of scarlet; Berberis Wilsonae and the curious B. hakeoides are conspicuous here.

Bodnant is justly famous for its Rhododendrons. In 1927, after the worst flowering year within the memory of the Rhododendron Society, Lady Aberconway and her son, the Hon. H. D. McLaren, won the Rhododendron Society's Cup at the annual show with an enchanting display. Well might others less favourably placed be astonished at the wealth of Rhododendrons which, in spite of all, bloomed at Bodnant. True, it has every advantage of position and natural scenery, as well as a mild climate, in which to display these plants at their best, but even these would be of little use without the taste and judgment combined with enthusiasm and enterprise of Lady Aberconway and her son, and the knowledge and skill of the head gardener, Mr. F. C. Puddle. At Bodnant, with its naturally beautiful surroundings, art has been welded into the scheme, until each strengthens the other.

A novel device is the Lily Walk. Here a number of tender shrubs are planted against a high south-west wall, from the top of which a peak of glass projects, giving overhead shelter. Curtains, suspended from a light, tubular iron frame may be drawn across the front, thus further protecting the plants during damp, cold weather. With this much help, such soft plants as Rhododendron giganteum and R. sino-Nuttallii, R. megacalyx and R. eriogynum, are grown in the open; other plants found here include Cape Heaths, Albizzia lophantha, Olearia chatamica and O. insignis, Crossosoma californicum, Cantua buxifolia, Cassia corymbosa, Gordonia axillaris, Eugenia australis and Rhodoleia Championii, all of them rare subjects. On the other side, between the wall and the pleached Laburnum walk, is a bed containing Lilies and Nomocharis.

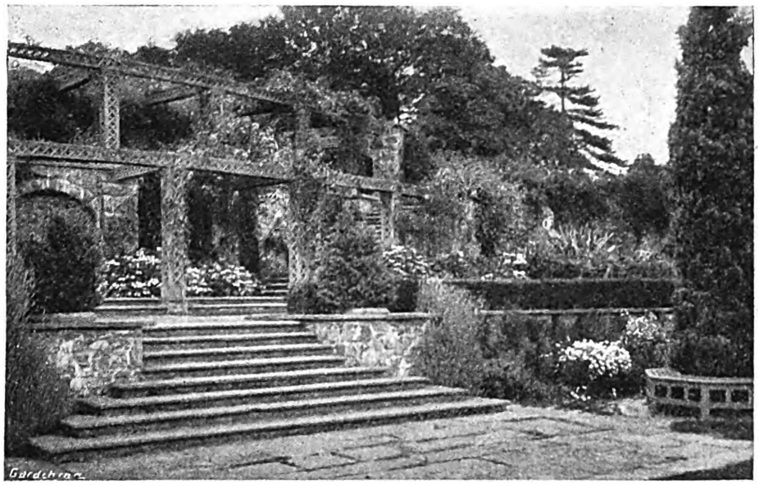

FIG. 82.—BODNANT: THE ITALIAN GARDEN.

Not a tithe of the plants grown at Bodnant have been mentioned. Nothing has been said of the conservatories, with their Hippeastrums, Orchids and Streptocarpus; or of the nurseries, or bulbs, or formal flower beds, but enough has been said to give some idea of the beauty and rarity of Bodnant. The plant names quoted will show how the temperate regions of the world from the Andes to the Himalayas, and from the Blue Mountains to the Caucasus, have been ransacked for good plants, but they will not show how these have been absorbed into a great garden. Plants, after all, are only the raw material, and to weave them into a harmonious whole is to compose a great symphony. This work still goes on, so that year by year Bodnant becomes the home of more plants, and better plants; indeed, it is in the forefront as regards novelty, having all the latest Himalayan introductions, and a prospective crop of hybrid Rhododendrons second to none. *F. K. W.*

NOTICE OF BOOK.

Plant Hunting.

DAVIDIA involucrata was one of the main objects of Mr. E. H. Wilson's first journey to Western China in 1899 on behalf of Messrs. James Veitch and Sons, and the successful accomplishment of that journey prepared the way for the next, which had for one of its ends the pursuit of Meconopsis integrifolia. Mr. Wilson's earlier ventures had far-reaching results in more ways than one, and it is improbable that Mr. Forrest's initial journey to Yunnan would have been undertaken if his patron had not been impressed by Mr. Wilson's account of this botanical paradise. Others of our countrymen followed, but these two pioneers paved the way for subsequent expeditions undertaken for the practical exploration of the flora of Western China.

We do not forget the earlier explorers of those remote regions—David, Delavay, Perny, Henry and the rest, all honoured names—but with the exception of Dr. Henry, still happily with us, horticulture as distinct from botany profited little from the pioneer work of these men, whose primary avocation was the collection of converts to the faith of the missionary societies to which they were attached.

The detailed history of Western Chinese botanical exploration has yet to be written, and probably never will be written, for the opening chapters are missing. We know much of David and Delavay's plant hunting operations from their tangible results, but an intimate and connected account of their lives in China is not available. Bretschneider[*] will probably remain the source of our information on the results of the efforts of the two men and others of the second half of the last century, but that is a very different thing from the story of their lives in China and of all that they saw in a virgin country. Mr. E. H. Wilson has set out something of his experience in *A Naturalist in Western China*, and the late Mr. R. Farrer, naturally a word-spinner first and always, made more of his two journeys than all other adventurers put together, thereby adding greatly to our knowledge of and interest in the subject. Some day, perhaps, Mr. Forrest, who has done such brilliant work for botany and horticulture, may be induced to commit an account of his travels to paper.

Western China has been so continuously in the forefront for twenty-seven years that we are apt to forget that other countries have their floras too, and in his latest book,[†] Mr. E. H. Wilson tells the story of his comparatively recent journeys to South and Central Africa, Australasia, the Tropics, Japan and Korea, and adds a postscript to what he has already told the world of his journeys to China. A botanist who, as he tells us, has spent twenty-three years of his life wandering about the world in search of plants, may be presumed to know something about both the world and the plants in it, and probably few men are better equipped for the purpose than the author. All through the book there are references, observations and comparisons which could only have been made by a man familiar with his subject, the familiarity resulting from first-hand knowledge and experience. Yet this is no arid botanist's diary with cut and dried lists of plants of this country and that; rather is it a series of broadly drawn sketches, often of historical and geographical interest, of countries visited, with notes and conclusions of much value to horticultural and arboricultural readers, all illustrated by many photographs of unusual excellence.

The first five chapters are devoted to South Africa, and if the cream of the flora of that country has long since been skimmed, so that the author saw nothing very new, there is an engaging freshness in his presentation of old friends, which he had known in cultivation for years, but had never seen in a wild state. All true gardeners will share his very natural delight at meeting these things on their own ground. When anything new or exceptional appears it is appraised at its true value, and illustrated by a photograph, and that rare tree, Leucadendron argenteum is a case in point. Those who try to grow it in the milder parts of Britain and find that it suddenly succumbs without apparent reason, will like to be assured that wild trees, which have a restricted distribution and are not found out of South Africa, behave in the same way. It is an exasperating habit which is shared by Fremontia californica and other trees. There is an excellent photograph of a wild specimen of Leucadendron argenteum (Pl. IX) and a singularly effective picture of Widdringtonia juniperoides (Pl. VI), another South African tree.

From the Cape to Uganda and Kenya is a natural transition of peculiar interest in these days when so much is heard of the flora of Kenya Colony, and so little known of it. Although the advance guard of the more alpine flora is already on test in gardens, much of it remains to be tried. Wilson went to Kenya mainly to see the Red Cedar (Juniperus procera), a giant which towers up to 150 feet high, and presents his readers with a picture of a remarkable specimen. Incidentally, a night in camp on the Aberdare mountains at about 11,000 feet, provided the explorer with a celestial spectacle more sublime than any he had seen in all his travels, and those who know their Kenya will appreciate his feelings. In Uganda, Wilson saw the Upas Tree (Antiaris toxicaria), and lays the ghost of the legend which ascribes to this tree the power of emitting poisonous vapours. "The tree is perfectly innocuous," he writes, "but it frequently grows in deep valleys where hangs heavy carbonic-acid gas, deadly to man and animals alike," and that is the origin of the myth.

Western Australia, the land of prehistoric plants, was a new world to Wilson, as it is to most men of the Northern Hemisphere, and some happily-chosen photographs illustrate the peculiar, and in many cases, primitive character of the trees and shrubs. There is an astonishing picture of the Bottle Tree—Brachyton rupestris—but other Australian trees, Eucalyptus, Banksia, Acacia and a dozen other genera, all had supreme interest for an arboriculturist, as, naturally, had the trees of Tasmania, including, especially, Eucryphia Billardieri, a tree sixty feet high and five feet in girth, as well as the Southern Beeches. The Tree Ferns of New Zealand were a revelation to Wilson and well they might be, for, "they crowd the gullies and glens, the forest's edge and depths, and form a green storey that seemingly one could walk on. Ten different species grow in millions of individuals. Noblest of all is Cyathea medullaris, fifty feet high." The Tropics of the old world and the new have their share of the book, and not the least interesting part of several chapters brimful of interest to plant lovers, is the story of Nepenthes Northianae. A gruesome photograph of a swamp of the deadly Mangrove (Pl. LXVIII) is worthy of Gustave Doré's brush.

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[*] *History of European Botanical Discoveries in China*, by E. Bretschneider, M.D. 1898.

[†] *Plant Hunting*, by E. H. Wilson, M.A., V.M.H., Keeper of the Arnold Arboretum of Harvard University. Price $15. The Stratford Company, Boston, Mass., 1927.

Naturally China and the Chinese have a place in the book, and there is an interesting sketch of plant hunting in that country from its beginning. Asiatic Crab Apples have a welcome chapter to themselves, and Lilium regale as well, which is understandable in the man who found that useful garden plant, brought it into cultivation and takes a pardonable pride in the discovery of what is doubtless one of the best hundred horticultural treasures of China. Less space is devoted to Meconopsis integrifolia, which Wilson also introduced to cultivation, and which ranks high among Chinese plants. It was one of the plants that Wilson set out to find, and when he first stumbled across it above Tachien-lu in 1903, his cap, naturally enough, went into the air. The photograph of this Meconopsis (Pl. CV) is a fine example of the perfection to which plant photography has been brought. The chapters on Formosa and Korea yield much of interest to gardeners, and we could wish the account of Wilson's climb of Mount Morrison had been extended. The Japanese flora is a subject of which the author is an old master, and the story of the Kurume Azaleas forms a fitting appendix to the author's previous work on the same subject. The photograph (Pl. CXIII) of a remarkable specimen of Rhododendron quinquefolium will set many Rhododendron growers wishing they could live in Japan.

The photographs with which the two volumes are liberally supplied are a picked set, and of their kind we do not remember having seen their equal. The book is bound in brown paper—possibly a concession to those who like to have their own bindings—but it is to be hoped that the precedent will not be generally followed. It is written primarily, no doubt, to help our American cousins to a better understanding of what to them are exotic plants, many of which should find a more congenial home in one part or another of the United States than they can in our island, and in the circumstances, a certain laxity of restraint in the style is, perhaps, explicable. There is an excellent index. *A. G.*

CONCERNING BORDER CARNATIONS.

WHAT proportion the losses among Carnations—due to the weather conditions as we have lately experienced—would bear to those among other floral subjects equally exposed, would make an interesting study, but so far as I can judge, the border Carnation compares very favourably and justifies its title to hardiness and ability to withstand a severe winter without being unduly affected. In this connection it is not always those varieties which are admittedly less suitable for the open border that suffer most. I have layers of Pasquin, Lt. Shackleton and Mrs. J. L. Gibson which have wintered perfectly, while second-year plants and layers of Elaine and Bookham Scarlet in the same bed, have succumbed.

A light soil is, of course, better suited to the yellow-ground Fancies, and may account for their good behaviour, the Selfs, in my opinion always doing better where planted on somewhat heavy soil, although here again there is a difference to be noticed in varieties. I have grown Joan Wardle very indifferently up to now, while Gordon Douglas is always good. The former, I know, is not always a good "doer" in the open in northern districts, being much better suited to pot culture, but it is a beautiful flower, superb for exhibition and well worth some trouble, its only fault being lack of perfume.

Other varieties which I find succeed best under glass are Ben More, a well-shaped, yellow-ground picoteed pink, and Woodpark, white-ground, lightly marked rose, which, to my mind, greatly resembles a white-ground Picotee in habit, although I have had excellent reports of it from northern districts, in the open border. Both these grew fairly well and gave decent blooms in the open last summer, but the winter was fatal to them, both plants and layers. Mrs. F. W. Seymour and Mrs. J. Fairlie, both perfect white-grounds, have grown well, while King's Jester and Clio are varieties in yellow-grounds of strongest border habit.

Of novelties sent out last autumn, much is expected of F. W. Ransome (F.C.C.), a really good Fancy. Seen last summer at Vincent Square, its sturdiness of stem and calyx and beautiful colouring attracted much attention, as did that of Florence Grisby, one of the brightest and best yellow-ground Fancies of recent years. It is an outstanding variety, and if its habit is all that is claimed for it, should be in great demand.

The white-ground novelty, Esmé Murray, which carried off so many honours as a seedling last season, should also prove an useful addition, for the layers have wintered well, and the grass is strong and healthy, while the flower is naturally large and perfect for exhibition. Another in this section, which it is hoped will be largely shown, is Yenton, its colour being very like that of Mrs. G. D. Murray, but the flower is larger and the plant of very much stronger habit. It was seen at the Carpenter's Hall two seasons ago as a seedling, and gained a First Class Certificate, while Regina, an excellent scarlet Self, shown at the same time, received an Award of Merit. The grass of both is strong, without being coarse, and the open border seems to suit them well.

FIG. 83.—BODNANT: THE PINETUM.
(see p. 157).

I am told that there is a new perfect lavender Self, named Jim Dalton (F.C.C., Sheffield), which lacks nothing for either exhibition or garden purposes, and grows like a weed in the open border. This, if true, will be doubly welcome, for Yvonne Thomas is about the only one of its shade at present suitable for both purposes in most districts. Purple Emperor is a reliable garden variety, giving a quantity of strong layers, with a really well-shaped flower, and we have the purple Louie Smith, sent out last autumn, for which are claimed all the advantages possessed by Jim Dalton; it is sure to be seen at Vincent Square in July.

An old favourite, Linkman, never yet surpassed in its own colouring, and therefore, in spite of its weak neck, still supreme on the show board, has a rival in the novelty Linkman Improved. The yellow-ground "Mrs. T. B.", which at its best is so much like Linkman as to be almost indistinguishable from that variety, also the fine Peace Treaty, have not superseded it, for there is no doubt that Linkman is of very strong habit and dependable for either pot culture or the open border.

A Fancy that will prove of use to exhibitors from the open border is Albert E. Amos, pale old rose, occasionally ticked with scarlet. Its shape, length and strength of stem, sound calyx and general habit could hardly be surpassed, while the amount of strong layers to be obtained make it an excellent investment.

We can never have too many Clove-scented varieties, the majority of border Carnations having little perfume, and on this account alone Kate Dew is welcome. The flower is a shapely white-ground Fancy, and large enough for all purposes. A strong grower in every way.

The very wet and cold season experienced in the north last year, while hardly being a fair test of plants, caused havoc, and made many amateurs turn exclusively to pot culture in despair. Some, however, having done badly with certain varieties in the open border, may like to know of others which have been very reliable. The white-ground Fancy, Alice Forbes, is accounted a gem. Evenly marked with crushed-strawberry, this novelty, with its unique colouring, has been greatly in request, and its habit will add to its popularity. I would also recommend Mrs. H. Lakeman, Nerissa and Pixie especially as being outstanding, while Endymion, Shirley Surprise and the beautiful pink Self, Cockatoo, will give a good account of themselves, as will Mrs. Fairlie and Mrs. Seymour.

Until another yellow Self, superior to Mary Murray is raised, this variety must reign supreme in this colour, both in the north and south. There is no other so popular, and although Eldorado is good, I think, for general purposes, the old Border Yellow is second in demand. Why good yellows are so scarce is probably due to the fact that this colour does not occur nearly so often in the seedling bed, and it is useless to send out any but first-class stock, which is not very often available, but there is no denying the fact that a new yellow Self, of exhibition form, is eagerly awaited.

Those who have grown Old Smoky and have not found it quite satisfactory, might try Thundercloud, a coppery-apricot variety suffused with dark grey, splashed with bright rose. It has a large flower with very strong calyx, is a consistently good grower and very floriferous; it appeals by its unique colouring to all who like this type of Fancy.

Those amateurs who hope to show at Vincent Square this summer will be interested to learn that the extra points hitherto awarded for unwired flowers will not be given in the future. All flowers wired or unwired, will be judged on their merits. This decision arose from the fact that last season a well-known amateur whose flowers were unwired, and who by this means won extra points and the Cup in the division in which he was competing, refused it on the score that his opponent's flowers, although wired, were really the better, and that the wire was only used for the purpose of setting up the blooms to greater advantage. This, on consideration, is perfectly reasonable, for in this case many of the varieties would be similar, and their habit, consequently, the same. So, except in the open-border classes and seedlings, which must be unwired, wiring is now optional and the blooms alone count.

A few words as to the blooms themselves. A large bloom is not necessarily a good one, although many exhibitors hold this idea until undeceived by the judges. I have seen a vase of three flowers passed over, a large bloom in it entirely spoiling the effect which would have been gained had all three been in proportion. I am aware that there is a craze for over-large flowers, but this, besides taking away the character of the Carnation, acts detrimentally in another way. Amateurs with a small collection, or those who only grow Carnations in the open border, often go to shows to see the type of blooms exhibited, and to gauge what their chances would be if they competed, and it is quite feasible to suppose they would be discouraged by seeing blooms which they could never hope to emulate, and which may have been obtained by sacrificing every bud except one. It requires a fairly large collection to be able to make this sacrifice, although it may be magnificent it is not *la guerre*, and good growers mostly realise this, showing well-grown blooms which will induce amateurs to purchase their stock which, after all, is their object. Hope springs eternal—luckily for the raiser—and although the majority of amateurs may never attain the height of their ambition on the show board, all those deserve the highest praise who never relinquish their efforts to do so. *J. B. Wells.*

A REVISION OF VIOLAS.

(*Continued from page* 85.)

Viola Reichenbachiana is Jordan's name for V. silvestris. Burnat regarded V. Reichenbachiana and V. Riviniana as two distinct varieties of V. silvestris, although he adds that their characters are not constant, and in the majority of specimens he was hard put to it to distinguish one from the other. The distinction drawn by Farrer (the former calcareous and the latter non-calcareous) does not seem to have any foundation, nor has the statement that the lower petal of V. Reichenbachiana is often more purple than the rest. There are many colour forms of V. silvestris. There are now recognised to be two distinct species—V. silvestris and V. Riviniana.

V. Riviniana, Reichenbach, is distinct from V. silvestris in the following particulars. The latter has the leaves more pointed, smaller, more hairy, and more flatly heart-shaped; the stem is more slender and shorter; the blossoms are smaller, reddish-violet, dark at the base of the petals and face front; the spur is straight, pointed, longer and dark violet; the auricles are rudimentary; the stipules are shorter and longly fringed; and the plant generally inhabits damp woods. V. Riviniana, on the other hand, has the leaves more obtuse, often reniform, slightly hairy, and more deeply heart-shaped; the stem is more erect, thicker and taller; the blossoms are larger, brighter in colour though a pale violet, and rather one-sided on their stem; the spur is thick, shorter, curved a little downwards, and either clear violet or yellowish white; the auricles are distinct; the stipules are larger, shortly fringed and often entire; and the plant inhabits light woods and is best where it gets some sun.

V. silvestris is most common in Central Europe, but is found from Teneriffe to Kashmir. V. Riviniana goes further north and is common in Scandinavia, and also takes special forms in Asia Minor, but it does not go further east. Both are native to England, the latter less frequent. It is native to Kent, has invaded my garden and has contracted an alliance with V. odorata Princess of Wales. It is a delightful Violet, but seeds itself everywhere—wherefore it is a charming plant for the wild garden, shrubbery or wood. It seems to enjoy life best at the very base of a deciduous shrub.

V. rostrata, Pursh, has, like V. biflora, the blessed attribute of having no synonym. Its extremely long spur makes it so distinct that not even a botanist could invent another name for a different form. The leaves are quite serrate—the other characters are as described by Farrer. It is not peculiar to the district round Quebec, but is found over the whole of Ontario, and thence spreads southwards along the Appalachian range to Georgia, rising to 2,600 feet in Virginia. Like a few other North American species, it is found again in Asia—in this case in Northern Japan, where it frequents similar rich woods and shady hillsides (growing in leaf-mould) as it does in America.

V. rothomagensis, Desfontaine, the Rouen Violet, is illustrated in the *Bot. Mag.*, t. 1,498. It is a peculiar Violet in that it stands alone between the Luteas and the Tricolors, and in that it is native to lime quarries in north-west France, being found near Rouen and near Paris among the hydrous calcium sulphate from which plaster of Paris is made. In cultivation, however, it presents no difficulties. At Floraire it produced the notable hybrid with V. cornuta—V. florariensis. In addition to the usual pale violet forms, the flowers are sometimes pale yellow. Distinguishing marks are that the whole plant is hairy, the lower leaves are orbicular, the upper leaves ovate, and the stipules palmately divided.

V. rotundifolia, Michaux, is a pretty yellow Violet (not pale blue, as stated in the volume in *Present-Day Gardening*), which has no runners and therefore is not a "stoutly running thing," as Farrer states. It does have short, leafless stems bearing cleistogamus flowers, but these do not root. It is not quite prostrate in growth, being about four inches tall, but the summer leaves (from two to four inches broad, whereas the early leaves at flowering time are but one inch broad) are prostrate. The leaves are oval, with a narrow sinus, so that they do not look distinctly heart-shaped. The seed capsules are closely dotted with purple, and the seeds are greyish. It extends from Maine westwards to Lake Huron, and thence goes so far south as Georgia, and is found in Beech woods among leaf-mould and rotten wood. The *Kew Hand List* gives V. clandestina as a synonym; this was the name given by Pursh to an autumn-flowering form found by him.

V. Ruppii, of authors, is V. canina sub-sp. montana.

V. Rydbergii, Greene, is a Violet on which Farrer lavished the highest praise, but any who have seen the plant labelled with this name in the herbaceous garden at Kew would not share his opinion. The Kew plant may be V. scopulorum—a poor form of V. canadensis—but it is interesting to note that the Kew label retains the name V. Rydbergii, whereas the *Hand List* correctly gives V. rugulosa as the authoritative name. Greene gave the name rugulosa to his plants from Minnesota, and Rydbergii to those from the Rocky Mountains, but the forms are stated to be not distinguishable. The Kew label also gives the plant as hailing from Greece (the *Hand List* correctly gives Colorado). It is tempting to imagine that a specimen was received from Athens in Georgia. The species is native to north-central and north-west United States, its southern limit being Colorado and its northern limit British Columbia. It is a rapidly spreading plant. Brainerd states that "It is noteworthy for its vigorous branching stolons, well underground, by means of which the plant spreads rapidly in the wild and in the garden, quite after the manner of Quitch-grass (Agropyron repens)." The stems are from one to two feet high, the lower leaves long petioled, up to four inches across, reniform, and densely downy below; the upper leaves successively smaller and becoming more pointed; and the flowers, from May to October, like those of V. canadensis. Its habitat is rich woodland. *E. Enever Todd, Lt.-Col.*

(*To be continued*).

DOMINION AND COLONIAL CORRESPONDENCE.

GARDENING IN PORT ELIZABETH, SOUTH AFRICA.

This city has three public parks, which in past years have had well-kept gardens, despite the fact that the land winds are very frequent and often very violent, while those from off the sea are so charged with saline matter that they give us much trouble. I have seen the foliage of the Eucalyptus, Cupressus macrocarpa and Aberia Caffra burned by the salt after a "black south-easter." Unless a good rain comes either with or immediately after the very strong sea winds all the exposed vegetation suffers, except Acacia cyclopsis. But we have managed to carry on in spite of these drawbacks. Now we are suffering from a real calamity—that of prolonged drought, and have no water. We now feel that we have had nothing to contend against before. Many of your readers will not be able to realise what a drought means to us here. We can grow nothing, except trees and succulents, during the summer months, without copious watering. All the shallow-rooting plants have to be watered daily, unless it rains, which seldom happens, and generally we are compelled to irrigate liberally throughout the year. The winds and continual sunshine very soon dry everything up here. Our soil is very thin, and more often than not the torrential rains have not time to soak into the ground. We do not get, therefore we never expect, much rain during the summer, but we always had water from the town mains, although at times we have had to be very careful with it; now it is strictly forbidden. There is no water for gardens, and the authorities are at their wits end to keep the people supplied, for there is barely enough to go round. The city has outgrown its water supply. The storage of all the city's reservoirs is only sufficient to last five months, therefore, if, as is practically the case, there is no water running in, one can imagine what a plight we are in. The rivers that are supposed to keep our reservoirs full are all but dry, for the rainfall in the catchment areas has been very small during the past two years. If there was a good deluge in those areas we should be smiling again for a time, but meanwhile, things are "dying, dying, dying." In our gardens, beds and borders are bare, and some of the permanent subjects are at death's door, while bowling greens, golf courses and cricket grounds are parched. The grass grown here is Cynodon Dactylis, our predominant local grass; it withstands our conditions better than any other and, bad as it is looking now, it would be green again in a few days after a good soaking rain. Some parts of the country are being blessed with heavy rains, but these do not reach the coastal belt.

There is, however, one part of this city which is not suffering. At the extreme south there is established a very pleasant and popular seaside resort which has its own water. One of the valleys has a good stream running through it and the background is densely covered with Acacia cyclopsis, which was successfully used for drift-sand reclamation purposes by the Forestry Department. This portion—the sea-front—has been taken over by the Municipality, and the capable Beach Manager, Mr. J. R. Long, has made it a veritable beauty spot. The banks are planted with succulents and other suitable plants, and the stream is converted into pools and planted with Water-Lilies and other aquatic subjects. We can, therefore, still see "cool-rooted flowers," sit beneath the "whispering roof of leaves" and look at "cooling streams of running water," by going a short distance. *C. E. Butters, Prince Alfred's Park, Port Elizabeth, South Africa.*

GARDEN MANURES FOR MARCH.

With the gradual increase of the temperature of the soil, growth becomes more active, therefore the need for plant food becomes greater, and the possibility of using so-called artificial manures broadens profitably, for it is an unquestionable fact that we have not yet reached the limit of profitable manuring in the production of crops.

It is becoming more and more evident that maximum crops depend to a large extent on a well-balanced system of manuring, and considerable evidence has been accumulated to show that a deficiency of potash may greatly minimise both the yield and quality of a crop. In the past, potassic manures have not been used quite so freely as nitrogenous and phosphatic manures, and many growers have considered that the amount of potash supplied by farmyard manure and bonfire ash was adequate to meet all the needs of the plants. Well-made farmyard manure in which the urine has been completely absorbed, is fairly rich in potash, and there is no doubt that bonfire ash is also rich in this fertilizer, but neither of these two sources of potash are fully available in these days.

The supply of farmyard manure is totally inadequate to meet the requirements of all our gardens, and up-to-date gardeners now systematise the collection and decomposition under controlled conditions of most of the material which previously kept the bonfire going, thus greatly reducing the supply of bonfire ash. In this direction it may be noted that many growers fail to obtain the full benefit from the small amount of bonfire ash available, as the residual potassium salts, which form the active manure of bonfire ash is so extremely soluble that, unless it is conserved dry and applied to plants during active growth, its value is lost.

It is not surprising then, that under systems of intensive cultivation, particularly on light soils, where garden crops are being constantly harvested, the need for potash is marked, and conditions may arise in these soils which make the supply of potash a controlling factor in crop production. There is, further, some evidence to show that the use of potash manures helps the plant to resist the attacks of certain fungous diseases, hence it is of the greatest importance that sufficient attention be paid to the inclusion of potash in any scheme of manuring.

The chief potash fertilizers available are kainit, potash salts of various grades, muriate of potash and sulphate of potash, and while there is certainly a case for the use of the two in their right season, the fact that they contain considerable quantities of other ingredients, chiefly common salt, suggests that it is now too near the seed-sowing season to use them for general purposes, and preference should be given to sulphate or muriate of potash.

Of these two forms of potash, muriate is much the better value if unit value is taken as the guiding factor, the cost per unit at current prices being 3s. 8d. for muriate against 4s. 7d. for sulphate. It would not be wise, however, to assert that muriate would always be the more profitable to use, as results differ under varying conditions and, further, research is necessary to discover these conditions. The essential difference between the two forms is that, whereas the carrier of potash in muriate of potash is a chloride, in sulphate of potash the carrier is a sulphate. In practice it is found that the application of a chloride in quantity retards germination and the growth of the young seedling, a disadvantage that is much reduced when a sulphate is applied. It is thus clear that dressings of muriate of potash should not be given to young plants early in the season when early harvesting of the crop is of great importance. As a dressing to established plants, however, it would appear to be the more economical form to use, at any rate, until further experiments have definitely established the conditions which favour the use of one or the other form.

The potential value of poultry manure is very great, but it is doubtful whether the best use is made of available supplies in this country. A good deal has been written on the desirability of poultry-keeping in conjunction with fruit-growing, and there is no doubt that, apart from the value of fowls in the orchard as an aid to the control of insect pests, the value of their manure is also appreciable. Poultry manure, when placed in a heap, is not only objectionable so far as appearance and health are concerned, but a very considerable part of its manurial value is lost. Where heaps have been allowed to accumulate, however, the material makes a valuable top-dressing for fruit plantations and may be applied now at the rate of two or three tons per acre. The manure is also suitable for gross-feeding kitchen garden crops, such as the Brassicas, and it may be spread between the rows in a fresh state as it comes from the poultry yard, when no part of its goodness will be lost. It is rich in nitrogen and may prove of unusual value this season as, owing to the heavy rainfalls in many districts, drains have been constantly running, and it may be expected that under these conditions a deficiency of nitrates in the soil is probable. *W. Auton.*

VEGETABLE GARDEN.

THE CLIMBING FRENCH BEAN UNDER GLASS.

Comparatively few gardeners grow the climbing French Bean in the kitchen garden, and still fewer grow it under glass. Most gardeners prefer the dwarf type for indoor forcing and also for outdoor planting. But the climbing type has its uses, as mentioned recently by Mr. Falconer in his weekly notes. It may be emphasized that the climbing French Bean is particularly valuable where large and constant supplies have to be maintained. One may pick and pick again without exhausting the supply. Still more, the plants grown under glass are more under control, and the produce does not become so coarse as when cultivated out-of-doors.

The finest example of the climbing French Bean growing under glass I ever saw was at Luton Hoo last year. The plants completely covered a span-roofed house; they were planted on a ridge of soil on each side of the house and trained up to meet overhead. At the time of my visit a fine crop of pods in various stages of development was hanging, and Mr. Metcalf, having to meet a big demand, spoke very highly of the worth and use of the climbing French Beans when treated as mentioned. *C. Turner.*

HOME CORRESPONDENCE.

Grass for Games.—Having to advise on the care of upwards of one hundred acres of grass for various games, I naturally read with special interest the notes that appear in *Gard. Chron.* from time to time. Observing the reply to a correspondent on Self-heal, I am constrained to mention the result of a successful battle last year. The particular groundsman concerned in the case assured me that it had appeared for the first time and had spread with amazing rapidity, so that in a week or two there were wide breadths. I was a little sceptical about its being a débutante, suspecting that it had been present for some time and unobserved, but there was no doubt about the infestation being serious. I told him to apply dry sulphate of ammonia rather thickly one evening, leave it all night, and next morning whisk it off and scatter it well over the grass with a broom. The treatment was perfectly successful. The concentrated sulphate scorched the Self-heal thoroughly, while the scattered particles fed the surrounding grass. This drastic procedure is similar to the plan which some groundsmen adopt for getting rid of Clover from cricket grounds, namely, "burning" it off with very strong solutions of nitrate of soda. The wet weather of 1927 undoubtedly produced many weed problems for keepers of games lawns, and strengthened the case for turf reserves, which we have found desirable. I note that my friend, Mr. F. W. Parker, advocates them in his interesting paper (pp. 86, 106, 122). Cutting out a bad patch and laying fresh turves often constitutes the most economical remedy, and it must be remembered that on the county cricket pitches groundsmen do this after every big match, however hot the weather may be. *W. P. W.*

Rhubarb.—In *Gard. Chron.*, June 28, 1924, p. 398, two varieties of Rhubarb were compared: Greengage and a red sort. The amount of oxalic acidity in Greengage was very much lower than that in the red one; both were grown in the open and not blanched. The leaves were not then tested. Some years ago I examined the oxalic content of garden Sorrel, but the figures are not by me at the moment; it would be interesting to compare this vegetable with Patience in this respect, though one may prophesy that it (Sorrel) would be the higher. Patience (Rumex Patientia) is but little grown, although some to whom it has been introduced extol it highly. *H. E. Durham.*

Superphosphate and Potatos.—On page 69, of your issue of January 28, Mr. W. Stewart states that the question of artificial manures is of vital importance to thousands of allotment holders who cannot obtain organic manure. From the manner in which he writes, one would think that I had banned superphosphate altogether. That was not my intention, for I use it largely myself. To obtain the full benefit from superphosphate and sulphate of potash, these manures should be forked or lightly raked into the ground after digging. Why put them in the drills at planting time, when they have to remain in the soil for weeks before becoming available as a plant food? Sulphate of ammonia is a quick-acting agent, and plants should be in active growth before it is applied. This is best applied, in the case of Potatos, between the rows, before earthing-up takes place. Mr. W. Stewart also states that these manures stimulate and promote the growth of stout, healthy haulm, thus fortifying the plant against disease. It is often the case with Potatos that the largest tops have the smallest tubers, and highly-fed plants are often like highly-fed people—more prone to disease than their more moderate brethren. I write from years of practical experience, and do not find it necessary to quote another's opinion. *Grigor Roy.*

Birds and Fruit.—Mr. Johnson's position is perfectly clear. What is not so clear is which are the crops which are to be so imperilled by any diminution in the numbers of the tits, as to justify the general community in refusing to concede us a few less tits, in order that we may have a few more Pears. Something more than a vague fear of the possible danger attending interference with insect-eating birds in general is required to justify a blank refusal to do anything to lessen the depredations of a particular bird, especially when there is a suspicion that the real reason for the refusal is the smallness and unimportance of the interests affected. The whole argument seems to be tainted with that infamous doctrine that only the big battalions have any right. It may be conceded as proved that the tits do good work in eating injurious insects; but they seem to do that good work badly; and when they have finished doing it, some one has to come along with a sprayer, or some such engine, and do it over again. I think Mr. Chapman is right in all he states. The interference of the State has upset the balance of Nature. Since such interference was, in the circumstances, inevitable, and cannot now be avoided, man must enforce against the birds disciplines of his own, in place of those firm and salutory disciplines of Nature from which his enactments now protect them. *H. A. Greatorex, Witton, Norwich.*

—— Had F. H. Chapman (p. 125) read all I wrote on p. 87 about Doyenné du Comice Pears, the last six lines of his note need not have been written. In common with the great majority of other people he has not yet realised that "pleasing the palate" is not the most important consideration in eating and drinking. "Eat to live" should be the rule, not "live to eat." These columns are not the place, however, in which to discuss that subject, so I beg space only to answer Mr. Chapman. If he finds "rollicking" pleasure in the body- and soul-ruining ways he implies, those who take pleasure in better things can only pity him, and hope that he will take life more seriously. *C. Nicholson, 35, The Avenue, Hale End, E.4.*

Strawberry Troubles.—Can any readers of the *Gard. Chron.* give fellow gardeners the benefit of their experience of Strawberry-growing during the past few years? On the light soils in this part of Surrey it is fast vanishing. In practically every garden, large or small, the trouble is the same, no matter whether special attention is given to the preparation of the soil, or whether just ordinary cultivation is attempted. In places where the crop was measured by the hundredweight it is now measured by the pound. New stock may be obtained in the autumn, and a small crop will ensue the following season—from plants that survive the winter; then the plants gradually dwindle away, and in many instances are smaller after one year than they were when planted. Previously, if Strawberries were planted two feet six inches apart on heavy Sussex clay, in two years they met, and in three years, if left so long, it was well-nigh impossible to walk between them. The crop was enormous, for even weak varieties such as Waterloo cropped well; in wet seasons the loss on the older beds, from mildew, was usually heavy, for the leaves excluded the sun and air. Now, in this neighbourhood, plants that are put out one foot apart each way, do not meet during the first year, and after that there are no plants to meet! Royal Sovereign is one of the worst offenders. Of others I have tried The Duke, Majestic, Givon's Late Prolific, Fillbasket and Leader. The Duke failed completely and the others were little better. Louis Gauthier certainly looks a little more promising; Madame Kooi succeeded for one year and then departed with no regrets, for, in my opinion, it is the worst variety introduced during recent years. The only variety that gives any return is Laxton's Latest, a very vigorous variety, with stout, healthy leaves. Strong runners crop well during the first season, if planted in August or early September, then most of them go the way of the other varieties. Have the bacteriologists nothing to tell us about the cause and the remedy, if such exist? *W. B.*

Gardeners' Royal Benevolent Institution. Being keenly interested in this charity, I was pleased to read your leading article (p. 93) in support of it. The apparent apathy of gardeners in general with regard to this work is difficult to understand. At the present time over 250 gardeners or their widows are receiving pensions from the Institution, and yet of those elected in 1926 the majority had been only occasionally subscribers or had not subscribed at all. The call on the funds by distressed gardeners who have been unable, through various causes, to provide for old age or infirmity, is on the increase, while many of the staunch supporters of past years have not been replaced. A perusal of the latest edition of the *Gardeners' Directory* will show thousands of names as "gardeners," yet less than fifteen per cent. of those names appear as subscribers to a fund to which many will appeal if they fall on evil days. In your issue of February 11 we note substantial legacies left to gardeners, but I fail to find their names amongst those who help to bear each other's burdens. *C. H. C., Windsor.*

The Mexican Spiderwort (Commelina coelestis).—I notice in the *Gard. Chron.* of February 4 (p. 80) that the writer of the article on this beautiful old plant (Commelina coelestis) asks if other growers have been successful with it. I, too, find that it is very fastidious, but I shall give it another trial, for it is indeed as vivid in colour as Salvia patens, and is well worthy of extensive cultivation. During the thirteen years in which I had charge of the Weston Gardens, Hertfordshire, I found that it flourished magnificently, producing stems annually to a height of two feet or more. It occupied a well-drained border against an Orchid-house wall facing south-east, and was planted in conjunction with Alströmeria aurantiaca and A. chilensis; associated with these it was particularly charming. During the growing season the roots were kept well supplied with water and occasionally given liquid manure. The only other assistance given to it was a good dressing of burnt refuse, together with leaf-mould, which was applied during the late autumn or early winter. It is considered by many to be half-hardy but I think that it will survive if given a well-drained position and sandy, porous soil. I may add that at Weston it even forced some of its shoots beyond the border into the pathway. *R. H. Crockford, Horsley Hall Gardens, Gresford, North Wales.*

Rhubarb and its Wholesomeness.—Mr. J. Parkin (in the issue of February 11) does well to question the wholesomeness of Rhubarb, on which subject doctors differ, as they do on practically everything else—except when they are unanimously wrong!—because medicine is not a science, but only an experimental art. To begin with, Rhubarb is not a fruit, and there is therefore no excuse really for eating it at all; in fact, to the vast majority of people it can be made palatable only by cooking it with more or less sugar, and the latter is itself wholly indefensible as matter for human consumption, because it has been extracted from its normal environment, which disqualifies it at once, and is afterwards subjected to several chemical processes which further spoil it as a wholesome food. Now, Rhubarb belongs to a group of plants (Polygonaceae) which are mostly astringent and acid, and the acid is in many cases oxalic—a most deadly poison. Rhubarb further contains in its cells raphides (plant crystals) composed of oxalate of lime, and these are exceptionally large, and have been thought to cause kidney trouble in susceptible people. Since the plant, then, is not really a legitimate food-stuff, can be made palatable only by the free addition of another illegitimate substance, and in any case contains an active poison in more or less quantity, and hard, spiky crystals likely to disagree with people with defective kidneys, is it worth while to eat such a plant with so much risk to health? True, the oxalic acid may be in very small quantities, but if a substance is a poison—and there is no doubt, I suppose that oxalic acid is—it is a poison in small quantity as well as large, and cannot fail to exert a deleterious effect on the human body if consumed, especially if it be consumed regularly, because poisons are as a rule cumulative, and although possibly each dose taken is minute, by the end of the season there may be such an accumulation of it in the system that serious trouble may result, and indeed, has no doubt often resulted, without being attributed to its true cause. *C. N.*

Cotoneaster frigida var. montana.—I was interested when reading the article in *The Gardeners' Chronicle* of January 21, on "New Hybrid Cotoneasters" (p. 44) and thought that you might like to see the enclosed fruited sprays from a tree of Cotoneaster frigida var. montana that is growing in this nursery. It arrived under this name from Berlin thirty-six years ago, and is now a spreading tree twenty-two feet high, with a spread of branches of thirty-nine feet. The trees of the ordinary C. frigida growing here seldom carry their fruits for any length of time, for so soon as the berries are coloured the birds clear them in the course of a few days, but they leave the berries of C. frigida var. montana severely alone. The fruits of this plant usually remain fresh and bright until May, unless they are blown off by the wind. *G. N. Smith, Daisy Hill Nursery, Newry.*

[The sprays that Mr. Smith sent us were heavily furnished with clusters of crimson fruits, all brilliantly coloured and in perfect condition.—Eds.]

The Ideal Park Superintendent.—I do not wish to indicate an entire absence of intimate knowledge of the subject dealt with, and I do not in any way minimise the importance of such a lecture as that given at the meeting of the Association of Parks and Botanic Gardens Superintendents, but I seriously suggest that those who are inclined to take up this particular branch of the profession should not arrive at the same conclusion as given by Mr. F. W. Parker (see pp. 85, 105, 122). In the first place, a Superintendent of Parks must be a man prepared to take upon himself responsibilities, and great ones at times; he must speak his own mind and not allow himself to be biased by untrustworthy critics—he must stand for complete control not only of his department but of his work. Since it is possible, by careful training, to increase his knowledge and so develop his own individual intelligence, there is no reason why he should go tamely to his committee and ask for outside professional assistance. Why is it then that we see many of our Parks Departments with the Town Engineer at its head and most of the construction work let out to contract? May I suggest that the curriculum followed in the training has been of the wrong order, and I feel that many of the points dealt with by Mr. Parker come under this order, and are best suited only for a foreman in charge of a public park and the chief clerk of the department. Every coming Superintendent should realise the immense importance of utilising every opportunity which is presented, for he should have entire control down to the smallest detail, and he should design, estimate and construct his own lakes and pavilions, roads and ballustradings, and prepare his reports and specifications on all landscape work. He should attend to the big things, for in his department there should be men to assist him in the upkeep of turf, flower beds and shrubberies, and clerks to check his tennis takings, etc. If he means to improve his position it is essential that he should organise and put to the best possible use the existing grounds under his charge, and the type of man for this work I would select would be from among the foremen of large landscape contractors, with a sound knowledge of the propagation of trees, shrubs and plants in large quantities—this man, with good education, has the ground work of an ideal Superintendent. Naturally, the Superintendent should develop his own enthusiasm, and with experience, tact, initiative and soundness of judgment, he will find that the Committee responsible will be alive to his worth, and will make the hire worthy of the labour involved. *B. H. MacLaren.*

SOCIETIES.

ROYAL HORTICULTURAL.

February 28.—There was a very bright show of flowers at the Royal Horticultural Hall, Westminster, at this fortnightly meeting of the Society. Orchids were again staged in considerable quantity, Cymbidiums being extensively shown and there were many splendid hybrids of this valuable genus. The Orchid Committee recommended two awards to novelties. The principal groups before the Floral Committee were of large-flowered Cinerarias, greenhouse Cyclamen, forced shrubs and alpines. This Committee recommended four awards to novelties. There was no exhibit before the Fruit and Vegetable Committee, which found very little business to transact. For the last time this spring photographs and paintings of plants and flowers were admitted, and the most important was the excellent series of photographs of Orchids displayed by Bertram J. Beckton, Esq., of Manchester.

Orchid Committee.

Present: Mr. C. J. Lucas (in the chair), Mr. Gurney Wilson (Hon. Secretary), Mr. Fred J. Hanbury, Mr. R. Brooman White, Mr. Clive Cookson, Mr. Lionel de Rothschild, Mr. S. Flory, Mr. A. Dye, Mr. H. Alexander, Mr. Fred K. Sander, Mr. S. Low, Hon. H. D. McLaren, Mr. Charles H. Curtis, Mr. J. E. Shill, Mr. T. Armstrong, Mr. J. Cowan, Mr. A. McBean and Mr. B. J. Beckton (Manchester), visitor.

Awards of Merit.

Cymbidium Pauwelsii var. Croesus (*Lowianum × insigne*).—A beautiful variety with large flowers admirably arranged on long spikes—two dozen on one spike. The sepals and petals are soft greenish-cream suffused with pink; the lip is lighter, with heavy brown markings on the apex. Shown by Sir W. H. Cooke, (gr. Mr. H. Butcher), Wyld Court, Hampstead Norris.

Laelio-Cattleya Gwendolen Leach (*Capulet × Merciana*). — A very beautiful hybrid bearing an erect spike of ten rich golden flowers; there is a little crimson staining down the centres of the two lateral sepals, and the lip is brilliant ruby-crimson with a golden base. Shown by Frederick J. Hanbury, Esq., (gr. Mr. Farnes), Brockhurst, East Grinstead.

Groups.

Mr. Walter Burns (gr. Mr. G. H. Wright), North Mymms Park, near Hatfield, contributed a very large group of Cymbidiums, many of the plants being large specimens carrying eight or nine big spikes. The brown shades were somewhat predominant and a few brighter coloured sorts would have enhanced the general effect of a great display. A few of the larger specimens represented Cymbidium Pauwelsii, C. P. magnificum, C. Ceres, Mymms Park var., C. Butterfly var. Golden Queen, very fine; C. brugense, C. Dryad, C. Erica Sander, C. Butterfly, C. insigne Sanderi and C. Alexanderi var. Purity.

Major Pam, Wormley Bury, Broxbourne, showed Orchis longibracteata, from Morocco; evidently two plants in the one pot, as one spike had white and reddish-green flowers and the other mauve and green. Burrageara Windsor was shown by Messrs. A. J. Keeling and Son. Sir Jeremiah Colman, Bt., sent Brasso-Cattleya Gatton Pearl (C. Cowaniae × B.-C. Gatton Lily). Fine plants of Cymbidium Alexanderi, Westonbirt var., with big, shapely, white flowers, and C. Pauwelsii var. Croesus, with buff and pink flowers, were shown by Sir W. H. Cooke (gr. Mr. H. Butcher), Wyld Court, Hampstead Norris.

Messrs. Sanders showed a very bright group of Orchids and naturally, at this season of the year, made a feature of Cymbidiums, showing C. Erica Sander in variety, C. Ralph Sander, C. Alexanderi, C. Pauwelsii, C. Eagle, C. Louis Sander and C. Madeleine; with these were associated Vanda Amesiana, Phalaenopsis Shilleriana, P. amabilis, Lycaste Skinneri in variety and Cirrhopetalum picturatum. We also noticed a plant of the rare Spathoglottis aurea-Veillardii.

In Messrs. J. and A. McBean's little group we noticed pretty plants of Cymbidium Caroll, Epiphronitis Veitchii, Laelia anceps var. Schröderiana, Laelio-Cattleya Beatrice and Cattleya Delphin var. splendens. Messrs. Black and Flory showed Sophro-Laelio-Cattleya Heatherwood var. Rosa, of rich colouring, L.-C. Edzell var. elegans, and a few good Cypripediums.

Odontoglossums provided the main feature of Messrs. Charlesworth and Co.'s display, and outstanding sorts were O. Helvetia, O. Penelope, O. crispum, O. Tityus, O. Omega, O. Pyramus, and the much-branched O. Matador. Odontonia Rona, Odontioda Diadem, O. Cora, Laelio-Cattleya Laguna var. callistoglossa and Phalaenopsis Rimestadiana were other good things.

In Messrs. Armstrong and Brown's collection Cypripedium Major Hanbury Carlisle was a central feature; around it were grouped Odontoglossum Messiline, O. Leonidas, the lovely little O. pulchellum, Dendrobium nobile, Tyntesfield var. and a few Odontiodas. Mr. Harry Dixon showed Cymbidiums and Cypripediums together with a few Dendrobiums, Sophronitis grandiflora, Oncidium cucullatum, and Lycaste Balliae.

Dendrobium chessingtonensis, of yellow colouring, was well-shown by Messrs. Stuart Low and Co., as well as Cymbidiums, Sophro-Cattleya Thwaitesiae, S.-C. Saxa, Sophro-Laelio-Cattleya Ruby, S.-L.-C. Corona, Brasso-Cattleya Alma, and the small but pretty Sarcochilus Fitzgeraldii.

Floral Committee.

Present: Section A.—Mr. Henry B. May (in the chair), Mr. J. F. McLeod, Mr. Arthur Turner, Mrs. Ethel M. Wightman, Mr. Frank Ladds, Mr. Wm. Howe, Mr. J. M. Bridgeford, Mr. Donald Allan, Mr. D. Ingamells, Mr. Courtney Page, Mr. James B. Riding, Mr. R. Findlay, Mr. W. B. Gingell, Mr. D. B. Crane, Mrs. Helen Lindsay Smith, Mr. Charles E. Pearson, Mr. G. W. Leak, Mr. E. R. Janes and Mr. W. D. Cartwright (Secretary).

Section B.—Mr. Charles T. Musgrave (in the chair), Mr. W. J. Bean, Mr. James Hudson, Mr. G. Reuthe, Mr. George Harrow, Mr. F. G. Preston, Mr. W. B. Cranfield, Mr. E. H. Wilding, Mr. E. A. Bowles, Mr. L. R. Russell, Mr. A. Bedford, Mr. T. Hay, Mr. G. Yeld, Mr. Hiatt C. Baker, Sir William Lawrence, Bt., Hon. Henry D. McLaren, Mr. W. G. Baker, Mr. R. C. Notcutt, Mr. Amos Perry and Mr. C. J. Lucas.

Awards of Merit.

Primula malacoides var. Rosalind.—A large basket of this admirable variety of the useful greenhouse species was shown. The plants were exceedingly floriferous, bearing many whorls of large, bright rosy-mauve flowers which have neat, pale primrose-coloured centres. Shown by Leonard Sutton, Esq., C.B.E., (gr. Mr. F. Townsend), Hillside, Reading.

Rhododendron arboreum var. nigrescens.—This showy variety was stated to have been found in the Himalayas. It has a large, crowded truss of slightly tubular flowers of deep crimson colour. Shown by Mr. G. Reuthe.

Rhododendron Kernick Gem.—A very beautiful variety derived from R. barbatum × R. Luscombei. It has a large, well-formed truss of widely-expanded, glowing pink flowers which are freely spotted with dull carmine on the two lower segments. Shown by Messrs. R. Gill and Son.

Saxifraga Delia.—A very pretty little variety of the encrusted group. The plants are neat little rosettes of leaves, heavily encrusted with sparkling white, from which rise graceful little spikes of two or three relatively large flowers. The stems and calyces are covered with fine hairs. The flowers are of deep pink colour in the tube and paler at the margins. Shown by Messrs. M. Prichard and Sons.

Groups.

Greenhouse plants formed an important feature of the show. Messrs. Dobbie and Co. showed a hundred or so splendid plants of the large-flowered Cineraria. These were all especially well-grown and illustrated a desirable strain of many good colours, amongst which the blues and pinks were particularly attractive.

At the end of the hall, Messrs. Sutton and Sons displayed a great many excellent greenhouse Cyclamen. These were attractively arranged in round baskets containing very floriferous plants, mostly of distinct colours, such as Giant Salmon Pink, Dwarf Salmon Pink, Giant Crimson and White, Firefly, of vivid colouring, and Vulcan, a dusky reddish-maroon, and all bore large flowers of the true Cyclamen shape, which is one of the great charms of the flower. For those who prefer novelties in form, there were baskets of Fringed Pink Pearl, of considerable colour value, and of mixed fringed varieties.

Near-by, there was a smaller exhibit of Primula malacoides varieties, shown by Leonard Sutton, Esq., C.B.E. (gr. Mr. F. Townsend), Hillside, Reading. These were accompanied by plants of the original species, and illustrated the great improvement that has been effected in such varieties as Dwarf Eclipse, Advance, Pink Beauty and Achievement, which were so well shown.

The Duke of Wellington (gr. Mr. H. J. Beckenham), Ewhurst Park, Basingstoke, exhibited a very effective group of Eranthemum pulchellum, a good blue Cineraria stellata, Primula malacoides, Lachenalia Nelsoni, Rhododendron praecox and Hyacinths.

Adjoining their Carnations, Messrs. Stuart Low and Co. grouped tall plants of Acacia juniperina with Camellias, Indian Azaleas, Acokanthera spectabilis, Thyrsacanthus rutilans and Boronia megastigma. Mr. G. H. Dalrymple had a good display of coloured Freesias, which included good seedlings of yellow and lilac colouring, and Yellow Hammer, Wistaria and Buttercup.

Considerable quantities of Sweet Violets were staged by the Misses Allen-Brown, Miss Heathcote and Mr. B. Pinney. All showed good bunches of Princess Mary, while the first-named also included the varieties Askania, Cour d'Alsace and Souvenir de Jean Josse, a large, pale violet single with definite rays of white. Miss Heathcote had good bunches of Viola odorata var. sulphurea.

Messrs. Allwood Brothers staged an attractive group of Carnations that included several beautiful novelties, amongst them being Cattleya Mauve, a large and richly-coloured variety; Maud Allwood, with flowers of a rich terra-cotta shade, and the scarlet Radiolite; while other noteworthy varieties were a new strain of Wivelsfield Claret, Jessie Allwood, Master Michael Stoop, the popular Laddie in exceptional condition, Mrs. C. F. Raphael, Spectrum, and the deep crimson Topsy.

A small but tastefully arranged group of Carnations was shown by Messrs. C. Engelmann, Ltd., the most striking sorts being Circe Improved, Jazz, Katja, Red Laddie, Maine Sunshine, Laddie and Topsy; while there were also fine blooms of White Pearl, Mrs. Hamilton Fellowes, Zorro and Betty.

Messrs. Stuart Low and Co. included in their charming group some fine blooms of the beautiful pink Carnation Eileen Low, the richly shaded Spectrum, Queen Mary, Ruby Glow and Topsy, and also some fine vases of Lady Hindlip, White Pearl, the new Lady Daresbury and Philip Sassoon.

The beautiful Carnation Mrs. A. J. Cobb was again exhibited by Messrs. A. F. Dutton, Ltd.; the blooms were in perfect condition and attracted a large number of admirers.

In a corner group Messrs. L. R. Russell, Ltd., displayed Pyruses, several varieties of Clematis, Azalea indica varieties, Azalea mollis, Wistarias and Dicentra spectabilis. Under the clock, Mr. George Prince had well-flowered sprays of the yellow Banksian Rose Fortune's Yellow and the showy variety I. Zingari.

Brilliant colour was provided by many Rhododendrons shown by Messrs. R. Gill and Sons. The chief sorts were Gill's Crimson, Karmesianum, Cornubia, Randall's Scarlet and barbatum. Mr. G. Reuthe also showed good varieties and species of Rhododendrons, including arboreum hybrids, R. Smithii, R. oreodoxa and Cornubia. In association with the Rhododendrons and other shrubs, Mr. Reuthe staged various alpines and hardy Cyclamen, dwarf Narcissi, Iris reticulata and other spring flowers.

Many of the collections of alpines were planted in low rock gardens where they made effective displays. Mr. Clarence Elliott had an especially happy arrangement, and included goodly sweeps of Saxifrages. The chief sorts were S. Burseriana Gloria, S. oppositifolia splendens, S. Griesbachii, S. kestonense, S. Irvingii and S. Riverslea. At the back he associated Iris reticulata with Erica carnea. Messrs. J. Cheal and Sons showed various Saxifrages, Anemone atrocaerulea, Androsace carnea and Primula Wanda.

Goodly breadths of Saxifrages were planted by Messrs. Tuckers, Ltd., who had Mrs. Leng, Faldonside, S. macedonica, S. apiculata alba and S. Burseriana sulphurea of good quality. They also planted Soldanella alpina. Messrs. M. Prichard and Sons showed Helleborus niger, Dicentra spectabilis, Primula altaica grandiflora and various Saxifrages. In their rock garden exhibit Messrs. Casburn and Welch planted Saxifraga Myra, S. Burseriana sulphurea, S. Gem and S. macedonica. The Misses Hopkins also had a neat rock garden exhibit. Messrs. Jeans and Trowbridge and Mr. Gavin Jones had small rock gardens planted appropriately.

With a background of Prunuses, Azaleas of various kinds, Laburnuns and evergreen shrubs, Messrs. W. Cutbush and Son displayed Crocuses, Tulipa praestans, Tubergen's variety and Chionodoxas. The Rev. Rollo Meyer, Watton Rectory, Herts., again showed Iris reticulata and Iris Cantab in quantity. Mr. Ernest Ballard had several good Hepaticas, including H. triloba, H. angulosa and the hybrid H. trilosa.

Well-flowered bushes of Forsythia suspensa, Prunus sinensis fl. pl., and Viburnum Carlesii formed a good background to the border flowers and alpines shown by Mr. F. G. Wood, who again had well-flowered plants of the double white Primrose. Iris reticulata and Omphalodes cappadocica. Messrs. Waterer, Sons and Crisp showed Rhododendron Nobleanum, Primula Wanda, Narcissus cyclamineus, Tulipa praestans, Tubergen's variety, T. pulchella and other spring flowers. In their exhibit, Messrs. W. Wood and Son grouped standard Prunus triloba fl. pl., and Viburnum Carlesii, over batches of Primula denticulata, the white variety, P. Juliae and various Saxifrages.

Many interesting alpines, in pans and pots, were shown by C. G. Kirch, Esq. (gr. Mr. J. Wall), Edenhall, Beckenham. These included Primula Allionii, Saxifraga Griesbachii, Wisley variety, S. Riverslea, S. Falconside, S. His Majesty, Shortia galacifolia and the rich blue Tecophilea cyanocrocus. Messrs. Pulham and Son showed dwarf Conifers, Saxifraga oppositifolia alba, S. Irvingii, S. Myra, S. Falconside and S. apiculata.

Amongst the collections of paintings of garden scenes and flowers the selection of photographs exhibited by Bertram J. Beckton, Esq., Daisy Bank, Irlam o' th' Heights, were of special interest to Orchid lovers. A great many splendid photographs were shown. These were taken on quarter-plates and enlarged to illustrate the diversity of form, character and habit of the Orchids. All the photographs were of plants grown by Mr. Beckton within three miles of the city of Manchester. They included many well-known Orchids and also Gomeza planifolia, Bulbophyllum barbigerum, Doritis pulchella, Trias picta, Warscewiczella discolor and Stelis micrantha. The photographs were accompanied by footnotes, with interesting particulars of the plants.

Narcissus and Tulip Committee.

Present: Mr. E. A. Bowles (in the chair), Mr. Peter R. Barr, Mr. A. W. White, Mr. F. A. Secrett, Mr. C. H. Curtis, Mr. W. Poupart, Mr. G. W. Leak, Mr. W. B. Cranfield, Mr. F. H. Chapman, Rev. Rollo Meyer, Miss E. Willmott and Mr. A. Simmonds (Secretary).

Groups.

A striking and tastefully arranged exhibit comprising Narcissi, Tulips, Crocuses and a few Hyacinths, all growing in artistic bowls, was staged by Messrs. R. H. Bath, Ltd. Of the Tulips there were exceptionally fine specimens of Prince of Austria, Le Rêve, King of the Yellows, Yellow Prince, Max Havelaar, President Lincoln and the richly-coloured Van der Neer. The centre of this group was composed of golden Crocuses above which towered the beautiful Narcissus Phyllida, and several Narcissus Poetaz varieties, including Jaune à Merveille and Sovereign, while there were also excellent specimens of Fleetwing, Silver Dawn, King Alfred, Olympia, the double-flowered Inglescombe, Crystal Queen and the large-trumpeted Glory of Noordwyk. The Hyacinths that were shown were La Grandesse, Shotel, Gertrude and Queen of the Blues.

Messrs. Barr and Sons arranged a striking exhibit of early spring bulbous and other plants, backed by vases of numerous Narcissi, all of which had been cut from the open garden. These included the beautiful N. Ptolemy, the rich golden King Alfred, Alasnam, Yellow Beauty, Golden Harbinger, Leige, and the frilled Maximus, amongst the trumpet types; while the Incomparabilis section was represented by Blackwell, Brilliancy and Bonaparte. N. Poetaz Triumph was exceptionally fine, as also were the dainty N. cyclamineus hybrids Orange Glory, March Sunshine and Le Beau. Small groups of Crocuses, including C. Golden Yellow, C. purpureus-grandiflorus, C. Pallasii, C. Margot and C. Kathleen Parlow were intermingled with such spring-flowering favourites as Iris reticulata, Muscaris, double and single Primroses, Anemone blanda and A. St. Bavo, Chionodoxa Luciliae and Scilla siberica, all of them attractively placed in peat and flanked by flowering sprays of Spiraea arguta and Forsythias.

A small but well-arranged group of Tulips and Narcissi, together with a few Hyacinths and Primroses, was arranged by Messrs. G. W. Miller. Of Tulips there were the double-flowered Electra, Tournesol, Schoonoord and El Toreador, and the single Brilliant Star, Pride of Haarlem, Prosperity, William Pitt and Farncombe Sanders. Also included in this exhibit were vases of Narcissus Flame, Elvina and King Alfred.

Fruit and Vegetable Committee.

Present: Mr. C. G. A. Nix (in the chair), Mr. W. Poupart, Mr. J. Cheal, Mr. H. Prince, Mr. E. Beckett, Mr. F. Jordan, Mr. A. Poupart, Mr. W. H. Divers, Mr. E. A. Bunyard, Mr. F. Bristow, Mr. H. Markham, Mr. J. Wilson, Mr. A. Bullock, Mr. G. F. Tinley and Mr. A. N. Rawes (Secretary).

No business of interest was brought before this Committee.

READING AND DISTRICT GARDENERS'.

The fortnightly meeting of this Association was held in the Abbey Hall, on February 20. There was a very large attendance, presided over by Mr. A. H. Fulker, to hear a lecture, accompanied by lantern slides, by Mr. F. Townsend, of The Gardens, Hillside, Reading on "How to keep a Greenhouse gay throughout the Year," a subject that proved very instructive to both amateurs and professionals.

He stated that during spring, Cinerarias are among the most valuable plants for the purpose, to be followed by Tulips, Narcissi, Amaryllids and Hyacinths. As the season proceeds, Calceolarias make a fine show, and then various annuals, the value of such charming subjects as Mignonette, Schizanthus, Clarkia, Nemesia, Antirrhinum and Salpiglossis being difficult to estimate. For the summer display Gloxinias, Streptocarpus and tuberous-rooted Begonias were suggested, whilst for autumn, use may be made of Chrysanthemums and fibrous-rooted Begonias, all of which give a wide range of colour. He suggested that during winter no flower is more popular than Primula sinensis, for the decoration of the greenhouse or the home.

Mr. H. H. Cook, in opening the discussion, fully voiced the feelings of the members and friends when he proposed a vote of thanks to Mr. Townsend for his valuable and interesting lecture.

In the competition for three dishes of three distinct varieties of Apples, there was an extraordinary number of entries for so late in the season, no fewer than fifteen lots being staged. The competition was exceedingly keen, but ultimately the judges awarded the first prize to Mr. M. Goddard, Bear Wood Gardens, Wokingham; the second to Mr. T. Butcher, of Glebslands Gardens, Wokingham; and the third to Mr. A. W. Gower, of Calcot Grange, Reading.

A fine exhibit of forty plants of Primula malacoides was staged by Mr. A. W. Gower, and was awarded a First Class Certificate, while Mr. C. J. Howlett, of The Mews, Earley, exhibited eight dishes of well-coloured Apples.

BIRMINGHAM AND MIDLAND GARDENERS'.

At the fortnightly meeting of the above Association, held at the Chamber of Commerce, on February 20, an interesting lecture was given by Mr. E. Moore, the Professor of Botany at the Technical College, Birmingham, on "Fertilization."

The subject was well illustrated by lantern slides, and the lecturer dealt first with low forms of plant life, such as Bacteria, in which no sexual reproduction takes place.

He explained the lowest stages of microscopically visible sexual reproduction, and then each successive stage, from the low forms to the higher forms of plant life.

His descriptions of the pollenation of some of the higher types of flowering plants, and of their adaptations for the prevention of self-pollenation, proved most interesting, and he suggested that although we have learnt a great deal about fertilization, there is still much more to be learnt. An interesting discussion followed the lecture, and the meeting was terminated by a vote of thanks being accorded to Mr. Moore.

CARDIFF AND DISTRICT GARDENERS'.

The fortnightly meeting of the above association was held at the Queen's Hotel, Cardiff, on February 14, when Mr. W. Bennett presided over a large attendance.

The lecturer for the evening was Mr. J. Hammond, of The Gardens, St. Mary's Lodge, Newport, who represented the Newport Gardeners' Association, while the subject of his most interesting discourse was "Vegetables for Exhibition," the vegetables with which he dealt being Peas, Beans, Potatos, Cauliflowers, Carrots, Beetroot, Celery and Leeks.

Mr. H. R. Farrer opened the discussion with many useful comments and helpful hints, while Messrs. Hams, Julian, Webber and Wright all assisted in making the evening a most enjoyable one.

TRADE NOTES.

Messrs. B. Ruys, Ltd., of the Moerheim Nurseries, Dedemsvaart, the well-known wholesale dealers in hardy plants, are celebrating their fortieth anniversary, and have emphasised the occasion by issuing a first-rate catalogue (wholesale only) of hardy plants, including Lilies, Nymphaeas and trees and shrubs. The catalogue contains coloured illustrations of one of the big hardy flower borders at Moerheim, and of Geum Fire Opal and Delphinium Queen Mauve, while there are half-tone reproductions of Aster Amellus var. R. Goethe, Campanula persicifolia Moerheimi, Coreopsis grandiflora, Delphinium Nora Ferguson, Eryngium Oliverianum, Gaillardia Lady Rolleston, Primula cashmiriana, Kniphofia Royal Standard, Lupinus polyphyllus, Downer's Delight, and many other subjects. The catalogue is instructive, well-printed and freely illustrated.

Patents and Trade Marks.—Any of our readers requiring information and advice respecting Patents, Trade Marks or Designs, should apply to Messrs. Rayner and Co., Patent Agents, of 5, Chancery Lane, London, who will give free advice to readers mentioning *The Gardeners' Chronicle.*

Obituary.

John Basham.—It is with the deepest regret that we announce the death of Mr. John Basham, of Bassaleg, Newport, on February 25, 1928, in his eighty-third year, after a long and painful illness. Mr. Basham ranked amongst the leading authorities on fruit culture in this country and his services in this respect were honoured by the Royal Horticultural Society so recently as the last Annual General Meeting, when he was awarded the Veitch Memorial Gold Medal. He was a successful nurseryman and market Gardener, while his knowledge of fruits and all matters connected with their cultivation made him an authoritative member of the R.H.S. Fruit Committee, and a much-sought-after judge throughout the country. His kindly disposition and broadmindedness will long be remembered by all who came into contact with him, while the record of his services to the St. Mellins Council, and the Newport Guardians, with whom he was associated for the past thirty-three years, will remain as a memorial to him. We join with his many old friends in offering our sympathy to the bereaved members of his family.

Adolphe van den Heede.—It is with great regret that we record the death, on February 17, of this veteran French horticulturist, at the advanced age of eighty-six. Famous as a nurseryman and a writer on horticultural subjects, van den Heede had received almost every honour that could fall to his lot, including the Orders of Commandeur du Mérite Agricole, Ordre de Léopold, Officier d'Académie, Croix de lere Classe de l'Agriculture Belge, etc., and had been an active member of many societies and associations connected with his life-interest, that of horticulture. He died at Lille, and his remains were attended to the grave by a number of friends. He leaves a son, Georges van den Heede, to carry on a great tradition.

ANSWERS TO CORRESPONDENTS.

Definition of a Double Flower.—*H. E.* Most flowers of double tuberous Begonias are sterile because they are the male flowers, the stamens of which are converted into petals. Occasionally, the female flowers become double and the seed vessel becomes open and sterile. The tree Carnation becomes double by the conversion of the stamens into petals, while its ovary, style and stigma may be perfect. The Japanese Chrysanthemum becomes double by the mere elongation of one lobe of the corolla, when the rays are flat; or all of the five lobes of the corolla may be present, and only the tube elongated. Another example of this occurs in the quilled China Aster, where all the florets are tubular, except the original outer row. The seed-producing organs are usually perfect in both these cases. The old double white Primula sinensis alba plena has its seed vessel, as well as stamens, transformed, and is sterile. Many varieties of this plant have a few petals in the centre, produced from the stamens, while the seed vessel is perfect and fertile. The above represent all the usual forms of doubling and thus show that some are the result of conversion into extra petals, while others are only enlargements.

Hyacinth Bulbs Diseased.—*W. F. E.* Your bulbs are suffering from a bad attack of bacterial disease, which may, or may not, have been present when they were purchased.

Names of Fruits.—*G. L. A. S.* American Mother.—*A. B.* 1, Beauty of Kent; 2, Scarlet Nonpareil; 3, Histon Favourite.—*J. O. T.* 1, Gravenstein; 2, Small's Admirable; 3, Lady Henniker; 4, Warner's King; 5, Dumclow's Seedling; 6, Bramley's Seedling; 7, decayed.

Communications Received.—R. H. .—A. E. Y.—H. B. —W. A.—F. P.—J. P. . —H. B. M.—H. S.—D. F. M.—A. G.—T. E. T.—H. E. D.—W. M.—A. G.—L. S. G.—N. A. C.—M. B. C.—W. S. S.—W. B.—P. M.—A. E. C. T.—A. A. W. and C.—F. J. S.

THE Gardeners' Chronicle

No. 2150.—SATURDAY, MARCH 10, 1928.

CONTENTS.

Alpine garden—
  Androsace sarmentosa Watkinsii ... 171
  Dianthus calalpinus 171
  Heloniopsis breviscapa 171
  Saxifraga cymbalaria 171
Antibes Horticultural Exhibition 166
Apples, the cold storage of 165
Barley, malting ... 166
Botanical Congress, Fifth International 166
Bulb Garden—
  Colchicum croaticum 170
  Galanthus byzantinus 170
  Hyacinthus amethystinus 170
Chrysanthemums, early-flowering 180
Commemoration Cup at Chelsea Show ... 166
Crocus Sunday at Kew 165
Eucalypti in N.W. Scotland 165
Flower and Fruit sterility 176
Flower Garden—
  Pentstemons ... 171
Fruit Garden—
  Nut growing ... 179
"Gardeners' Chronicle" seventy-five years ago 167
Gardens at Olympia, the 177
Hardy flower border—
  Centaureas ... 170
Ideal gardens and plant lore 174
Indoor plants—
  Anthurium Scherzerianum 170
  Browallias 17
  Caladiums 170
Lime or chalk ... 180
Mycorrhiza in plant growth, the role of... 174
Obituary—
  Gaut, Alfred ... 182
  Milne, G. P. ... 182
  Teisseire, Francois 182
Orchid notes and gleanings—
  Orchis longibracteata 170
Parks and Gardens, Public 181
Potatos immune from Wart Disease, new... 167
Primula, the genus ... 176
Rhododendrons, some dwarf 172
Rose garden—
  Rosa multibracteata 173
Roses, mulching ... 180
Snowdrop, a giant ... 180
Societies—
  Horticultural Club 181
  Manchester and North of England Orchid 181
  Orchid Club ... 182
South African Botanical "Journal"... 166
Sulphur, the value of 179
Superphosphate and Potatos 181
Sweet Pea "Annual" 166
Tomatos 179
Trees and shrubs—
  Drimys Winteri ... 178
  Cornus florida ... 173
Vegetable garden—
  The Cabbage ... 180
Violas, a revision of ... 172
Week's work, the ... 168

ILLUSTRATIONS.

Commemoration Cup, the 166
Cornus florida 173
Dianthus calalpinus 171
Laelio-Cattleya Gwendolen Leach 167
Olympia, gardens at 177, 178
Orchis longibracteata 175
Rosa multibracteata 169

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 41.6°.

ACTUAL TEMPERATURE.—

The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London, Wednesday, March 7, 10 a.m. Bar. 30.1. Temp. 43°. Weather, Drizzly.

Cold Storage of Apples.

IN recent years the market for fruit in this country has undergone a great change, and one which intensifies for the home-grower the problem of disposing of his produce at a profit. This has been brought about largely by the development of cold storage in overseas countries, and still more on the ships which carry fruit from those countries to our ports. As a result of this development, the period during which the home-grower has our markets to himself for any particular fruit grows shorter every year, and, so far as Apples are concerned, may almost be said to be approaching the vanishing point. With the possibility of holding fruit in cold storage in the country of production, and the transport of it under similar conditions on board ship, there is scarcely a limit to the time at which such fruit, from one source of origin or another, cannot be placed on our markets. At the present time Peaches, Nectarines, Grapes, Plums, Pears and Pineapples are arriving from South Africa, and a first consignment of Grapes from the Argentine is expected to come to hand by the time these lines are in print. It is with Apples, however, that the business of cold storage has reached the greatest dimensions. On December 1 last, holdings of Apples in cold storage in the United States were the equivalent of 7,811,000 barrels; and, owing to the short crop, this was more than a million barrels below the five-year average. In the face of these facts, it is not surprising that English growers have begun to explore the possibilities of the system. On several of the largest fruit farms cold stores have been in operation for some years, the first successful commercial venture of this kind dating from 1913; and there are now nearly a score of such stores owned by individual growers. In most cases existing buildings, such as barns and hop-oasts, have been adapted for cooling by the ammonia compression system, and the cost of installation has not been excessive. A few of the larger stores have, however, been built expressly for the purpose at considerable expense. The main use to which these stores are put is the holding of Bramley's Seedling and other late cooking Apples over the winter, until such time in the spring as the markets become clear of these varieties kept in the ordinary way. In recent years such extensive areas have been planted with late cooking Apples, particularly Bramley's Seedling, that markets are fully supplied and prices are low during the autumn, even in seasons when the crop is light. Apples taken from cold storage in the spring have, so far, generally realised nearly double the prices ruling in the autumn. In some years it is necessary to store the fruits until April in order to reap this reward, but this year, owing to the light crop of Bramley's Seedling in the country as a whole, and rather short supplies of American Apples, values increased earlier than usual; a good many parcels from cold storage came on to the market during February, and there are still more to follow in March. There is usually a favourable period between the American and Australian crops when English Apples are welcomed by salesmen. In addition to their value for keeping late cooking Apples through the winter, cold stores have proved useful during the early autumn for holding dessert varieties, notably Worcester Pearmain. On many fruit farms this is the most largely grown dessert Apple, and, when there is much packing to be done, the fruit is apt to lose condition before all can be dealt with. Cold storage prevents this. Plums have also been stored with success for short periods. Even a week's storage may enable a grower to escape the worst of a glut and secure better prices. The cold storage of fruit is a process which has its own problems, and much has yet to be learned about it. Apples, for instance, cannot be frozen like meat and thereafter kept for an indefinite period. Even after they are picked from the tree and placed in the store their life process continues, and conditions of temperature and humidity have to be adjusted carefully, or troubles such as "internal breakdown" and "scald," which are peculiar to stored fruit, cause much loss. Investigation into such problems began in this country so long ago as 1898, when Mr. W. P. Wright, Kent County Horticultural Superintendent, had charge of a series of experiments in the cold storage of Apples, Pears and Plums at Dartford. Recently, a great deal of research work has been undertaken at several centres, notably at the Low Temperature Research Station at Cambridge, at the instigation of the Food Investigation Board. Valuable information as to the best temperature and degree of humidity for various classes of fruits has already been secured, together with facts concerning the construction and insulation of stores and the maintenance of a uniform temperature throughout large chambers, which are of more interest to the storage engineer than to the fruit-grower. It has been found necessary also to study intensively each type of produce to find out precisely the factors which determine good keeping quality, and also to discover which varieties are best equipped with these factors, and the extent to which they may be affected by cultural methods, such as spraying and manuring. A field of investigation which has still to be explored is atmospheric control in the store. Enough is known about this to suggest that it is almost as important as temperature control. Fruit in storage is still living, taking in some of the oxygen of the air and giving out carbon dioxide. The problem for the research worker is to supply the produce with such a combination of oxygen and carbon dioxide that the vital activities proceed at such a rate as to give it the maximum life. By decreasing the amount of oxygen in the air and increasing the amount of carbon dioxide, the activities of the produce are slowed down, and natural ripening is retarded. This atmospheric modification cannot, however, be continued indefinitely without endangering the life of the produce, just as there are limits to which the temperature of the store may be lowered without disaster.

Crocus Sunday at Kew.—On the first Sunday in March, popularly regarded as Crocus Sunday, the mounds of richly-coloured blooms near No. 3 Museum attracted crowds of visitors. More than 22.000 people passed through the turnstiles, which is a record for the first Sunday in March. The blue, white and striped flowers were in perfect condition but the yellows were rather past their best. The Crocuses, however, were by no means the only attraction. The mound between the Cumberland Gate and the Pond is already gay with early Daffodils. Many groups of Forsythias in various parts of the grounds are mounds of yellow blossoms. In the Rhododendron dell the recent mild weather has been ideal for the development of such early sorts as R. Nobleanum, R. praecox and R. barbatum, the Dell being unusually attractive for so early in the year.

Eucalypti in North-west Scotland.—An interesting account of the manner in which various species of Eucalyptus have flourished at Loch Hourn appears in Vol. XLI, Part 2, of the *Scottish Forestry Journal*, in a contribution by Mr. J. A. B. Macdonald. These were planted by the late Mr. Robert Birbeck, and it is interesting to note that an account of the successful establishment of these trees appeared in *The Gardeners' Chronicle*, Vol. XXV, in an article entitled "Eucalyptus in this Country," that was written by the late Mr. R. Birbeck. In his account of the present day state of these trees, Mr. Macdonald describes, and illustrates with several fine photographs, how that three distinct species have been identified at Loch Hourn. The first species is labelled Eucalyptus cordata; the specimen measured, which was branched practically from the ground, has at one foot, a girth of six feet nine inches, and is about thirty-five feet in height. It has glaucous-green, rounded and strongly-scented leaves, and rounded fruits similar to Acorn-cups. The next species is identified as E. Muelleri; it has thick, lanceolate leaves that are dark and glossy, and also strongly-scented. One specimen has a girth, at breast-height, of four feet nine inches, and is approximately forty feet high. The third and most common species is said to be E. coccifera—it was planted singly in the open and also in groves. The glaucous leaves of these plants are lanceolate in shape, and are hooked at the tips, while the seed capsules are conical. The average girth of these trees at breast-height, is thirty inches, while the height is given as from thirty to thirty-five feet.

Legacies to Gardeners.—The late Rt. Hon. Chas. Napier, Baron Lawrence of Kingsgate, of Eaton Square, S.W., who died on December 17 last, bequeathed £100 to his gardener, Mr. William Lawrence. — The late Mr. Leslie Chatfield-Clarke, of Daylesford, Newport, Isle of Wight, left one year's wages to his gardener, Mr. George Attrill, if still in his service at his death.—The late Mr. J. B. Paynter, of Hendford Manor, Yeovil, bequeathed £100 to his gardener, Mr. P. Martin.—The late Mr. C. J. Dobson, of Hawthorn Dene, Bournemouth, who died on January 9, bequeathed £100 to his gardener, Mr. S. Smith.—The late Mrs. H. Mansfield, of Savernake, Redland Road, Bristol, who died on November 30, bequeathed £100 to her gardener, Mr. G. Dawes.

Malting Barley.—A Conference on Malting Barley, will be held at the Rothamsted Experimental Station on Thursday, March 15, 1928, at 11.30 a.m. The chair will be taken by Lt.-Col. Sir Archibald Weigall, K.C.M.G., D.L., J.P., and the speakers, with their subjects, will include among others, Mr. Robert V. Reid, Past President, Institute of Brewing, "What the Barley Buyers Want"; Mr. James Stewart, "The Influence of Season on the Yield and Quality of Barley"; Mr. John Joyce, Preston Bowyer, Taunton, "Cultivation and Treatment of Barley grown for Malting in the Vale of Taunton"; Mr. G. H. Nevile, Wellingore Hall, Wellingore, "Cultivation and Treatment of Barley grown for Malting on the Lincolnshire Heath"; Mr. W. H. Parker, Director, National Institute of Agricultural Botany, "Malting Barley: Old and New Varieties"; and Sir John Russell, D.Sc., F.R.S., "Five Years' Experiments on Malting Barley." Dr. E. S. Beaven, Warminster, Mr. F. Raynes, Norfolk Agricultural Station, and others will take part in the discussion.

The Sweet Pea 'Annual."—This excellently-prepared publication, the official organ of the National Sweet Pea Society, should prove most useful to all lovers of the popular Sweet Pea. It contains much information regarding the numerous activities of this Society, and also much that is useful from a general cultural point of view. Naturally, a considerable portion of the book is devoted to various items directly connected with the Society, such as the lists of Officers and Committee, and of the members of the Society, and also lists of the prize-winners at the annual show of 1927, and of the awards made by the Floral Committee, an extremely active and useful body. An interesting feature is the publication of the three prize-winning essays in the competition organised by the Committee, and of extracts from those that were commended, the title of these essays being "My Sweet Pea Problems and Pleasures." In these will be found much interesting food for thought and many instructive hints for all Sweet Pea enthusiasts. The "Classification of Sweet Peas," consisting of an alphabetical selection of up-to-date varieties, with special indications as to the best in each of the colour classes, and also as to those most suitable for culture under glass, is yet another evidence of the Floral Committee's activities, while the list of "too-much-alike varieties" should prove an useful guide for growers and exhibitors. In connection with this list it is stated that not more than one variety of each group bracketed as alike may be shown on the same competitive stand at any exhibition held under the auspices of the National Sweet Pea Society, unless otherwise stated. The list of twenty-four varieties that the Floral Committee considers to be most suitable for garden adornment should prove invaluable to amateurs, while the Audit of Sweet Peas, compiled by Mr. George H. Burt, is another guide for exhibitors. The *Sweet Pea Annual* contains a number of well-prepared illustrations, including several portraits. It is a work that should undoubtedly find a place on every Sweet Pea lover's bookshelf.

Proposed Sports Ground at Burnham Beeches.—Representatives of the Berkshire County Council the Buckinghamshire County Council, the Eton District Society, the Society for the Preservation of Commons, and the Society for the Preservation of Rural England, have petitioned the City of London Corporation in regard to the Corporation's proposal to establish a sports ground on East Burnham Common. The petitioners urged that suitable ground could be obtained elsewhere, and that a sports ground on the site suggested would be inimical to the natural beauty of Burnham Beeches.

Visitors to Kew in 1927.—We learn that 1,078,088 persons visited the Royal Botanic Gardens, Kew, during 1927, or 84,549 fewer than in 1926; the decrease was, no doubt, due to the continuously wet and dull weather during the greater part of the year.

Commemoration Cup at Chelsea Show.—With a view to encourage the cultivation and exhibition of stove and greenhouse plants, the Council of the Royal Horticultural Society is offering a special award at the Chelsea Show to be held on May 23, 24 and 25. This award is a handsome Silver-gilt Commemoration Cup valued at a hundred guineas—to commemorate the opening of the New Hall—and £30 in cash. It will be offered for the best exhibit of flowering and foliage plants commonly grown in stoves and greenhouses and staged on an area of three hundred square feet. Growing plants only may be exhibited. Each competitor will be allotted a rectangular island site in one of the marquees. Backgrounds will not be permitted. Competition will be open alike to amateur and trade growers, and applications for space must reach the Secretary of the Royal Horticultural Society, Vincent Square, Westminster, not later than March 24. The design for the Commemoration Cup (Fig. 84) was prepared by Mr. Omar Ramsden.

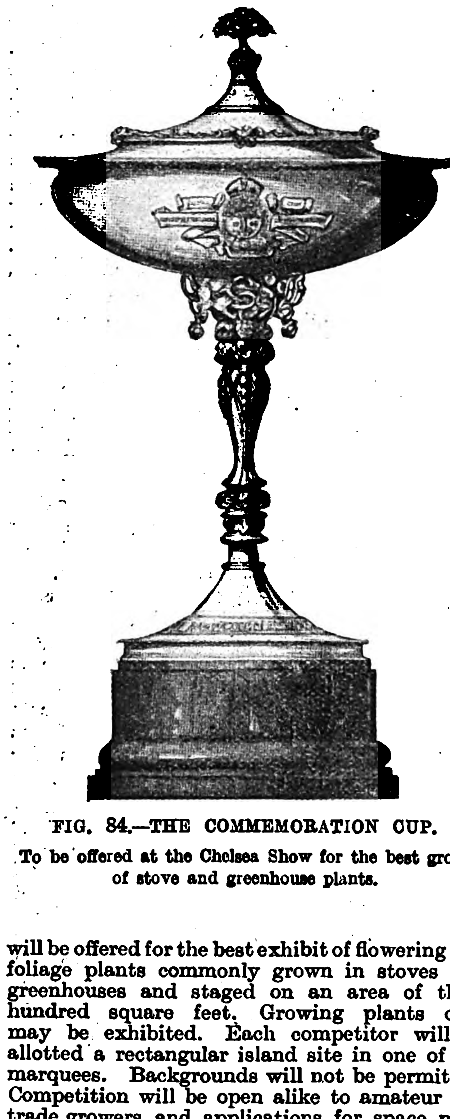

FIG. 84.—THE COMMEMORATION CUP.

To be offered at the Chelsea Show for the best group of stove and greenhouse plants.

South African Botanical Journal.—The *Journal* of the Botanical Society of South Africa, Part XIII, contains several articles of general horticultural interest, perhaps the most important being the "Notes on Mesembryanthemum and Allied Genera," by Mrs. L. Bolus. These notes are well illustrated by coloured plates, several photographs, and a few drawings, the coloured plates depicting quite well the beauty and quaintness of a number of the members of the Mesembryanthemum family. Mrs. Bolus describes at length the time of day at which the various species open their flowers; although, apparently, many of the most attractive open their blooms when the sun is hottest, the remainder spread the time of expanding them over the twenty-four hours. M. pomeridianum and M. pugioniforme, for instance, wait until one o'clock before displaying their blooms; others are night-flowering, often remaining open until early morning; while again, there are some, as M. inclaudens, that produce blooms which when once opened remain so throughout the day and night, no matter what the weather is like. The writer then proceeds to describe in detail the structural characteristics of the genus at large, special mention being made of a few of the remarkable growth-forms, with their special devices for endeavouring to exist under conditions far from congenial. The article dealing with South African Succulents mentions a large number of plants, many of which are well-known to cultivation in this country. The *Journal* also contains much interesting information concerning the activities of this Society, especially in connection with the National Botanic Gardens at Kirstenbosch, where it is proposed to create an additional Succulent Garden, towards the establishment of which the Society has subscribed £300. In the contribution entitled "Alien Trees at Kirstenbosch," we learn of the successful cultivation of a number of subjects that are not indigenous to South Africa, and of which quite a number are European. Specimens of Quercus Robur are apparently very conspicuous, while the Sweet Chestnut (Castanea sativa), the Grey Poplar (Populus canescens), the Alder, the Ash, and the Silver Birch, together with Pinus Pinea and P. Pinaster, all seem to have become thoroughly established in these gardens.

Open Spaces for Cologne.—The City of Cologne is projecting a considerable extension of open spaces to the south of the town, and if the necessary local and national financial support is forthcoming, a scheme will be prepared involving an expenditure of about eight million marks.

Old Palace Garden, Darmstadt.—The so-called "Old Palace Garden," which is situated in the centre of the town of Darmstadt, has lately been the subject of much discussion, and at one time it was in danger of being built over. It is now proposed to restore it as a public garden, to remove the wall around it, and to add to its amenities by the provision of pavilions and a central fountain with a children's playground.

Association of Parks Superintendents.—A meeting of the London branch of this Association will be held in the Lecture Room of the R.H.S. Hall, Vincent Square, on Tuesday, March 13, when an address will be given by Mr. W. H. Johns, N.D.H., Superintendent, Gardens and Open Spaces Department, Bermondsey Borough Council, entitled, "Soil and Manurial Problems of Public Parks." The chair will be taken by Mr. A. J. Ashmore at 7 p.m. precisely.

Antibes Horticultural Exhibition.—The forthcoming horticultural exhibition at Antibes, France, has been fixed to take place from March 15 to 18. All sections will be represented, including floristry, plant novelties, cut flowers, plants in pots, stove and greenhouse subjects, vegetables, fruit, sundries, garden design, etc. A good number of entries is likely to be received, for, over and above the value of the prizes offered, the visitors should be numerous, as the Riviera season is by no means over.

Fifth International Botanical Congress.—At the Fourth International Botanical Congress, held at Ithaca, United States of America, in 1926, an invitation from British Botanists to hold the next International Botanical Congress in England was accepted. It has since been decided that the Fifth International Congress shall be held at Cambridge from August 16 to August 23, 1930, with excursions during the following week. An Executive Committee of British botanists has been appointed to make the necessary arrangements for the Congress. The members of this Executive Committee are Dr. F. F. Blackman, Professor V. H. Blackman, Dr. E. J. Butler, Professor Sir John Farmer, Professor F. E. Fritsch, Professor Dame Helen Gwynne-Vaughan, Dr. A. W. Hill, Professor Neilson Jones, Sir David Prain, Dr. A. B. Rendle (Treasurer), Professor A. C. Seward (Chairman), Professor W. Stiles and Professor A. G. Tansley, together with Mr. F. T. Brooks, 31, Tenison Avenue, Cambridge; and Dr. T. F. Chipp, Royal Botanic Gardens, Kew (Secretaries.) The subscription for membership of the Congress will be £1, which should be paid to the Treasurer, Dr. A. B. Rendle, British Museum (Natural History), London, S.W.7, before January 1, 1930, if possible, or, at the latest, by April 1, 1930. Early notification to the Treasurer of intention to attend the Congress is particularly requested. As at present arranged the Congress will be organised in the following sections: Palaeobotany, Morphology (including Anatomy), Taxonomy and Nomenclature, Plant Geography and Ecology, Genetics and Cytology, Plant Physiology, and Mycology and Plant Pathology. For each of these sections a British Sub-Committee has been appointed, by which the programme for each section will be arranged. The Chairmen of these Sub-committees and their addresses are as follows: Palaeobotany, Professor A. C. Seward, Botany School, Cambridge; Morphology (including Anatomy), Professor F. E. Fritsch, Danesmount, Tower Hill, Dorking, Surrey; Taxonomy and Nomenclature, Dr. A. W. Hill, Royal Botanic Gardens, Kew, Surrey; Plant Geography and Ecology, Professor A. G. Tansley, Department of Botany, The University, Oxford; Genetics and Cytology, Professor Sir John Farmer, Imperial College of Science and Technology, London, S.W.7; Plant Physiology, Dr. F. F. Blackman, Botany School, Cambridge; Mycology and Plant Pathology, Dr. E. J. Butler, Imperial Bureau of Mycology, 17, Kew Green, Kew, Surrey. So far as possible the programme for each section will consist of papers given at the invitation of the Sectional Sub-committee; arrangements for general discussions will also probably be made by the Sectional Sub-committees. Communications made to the Congress by means of papers or by participation in the general discussions will be permissible in English, French or German. Correspondence of a general nature about the Congress should be addressed to one or other of the Secretaries.

Rot in Scotch Potato Pits.—According to the Board of Agriculture's report, the present condition of the Potato crop in Scotland is better than might have been expected, considering the unsatisfactory weather conditions that were prevalent when the Potatos were lifted. In many eastern districts an unusually large proportion of the tubers had rotted in the pits, especially where the crop was grown on heavy soils, and where frosts occurred before lifting was completed. In the Lothian district, rotting in the pits has been much more serious than usual and supplies of good sound ware are in consequence considerably below the normal. In most western and south-western areas, however, there are very few signs of wastage or disease, and so far as is known, the crop has kept well. As a result of the continuous bad weather, some of the crop in Shetland was still in the ground at the end of January.

New Potatos Immune from Wart Disease.—The Ministry of Agriculture and Fisheries has made the following additions to the list of varieties approved as immune from Wart Disease for the purposes of the Wart Disease of Potatos Order of 1923:—Clovullin, Cluny, Early Templar, Electron, Glen Ericht, Gregor Cups, Harcarse Red, Inverness Favourite, Lord Tennyson, Medland, Scale's Pride, Sharp's Pink Seedling, The Cherry and The Craigie. Details of the characteristics of these varieties will be given in the Ministry's *Journal* for March. A complete list of the names of the varieties of Potatos officially approved as immune from Wart Disease may be obtained on application to the Offices of the Ministry of Agriculture and Fisheries, 10, Whitehall Place, London, S.W.1.

Appointments for the Ensuing Week.—MONDAY, MARCH 12: Derbyshire Horticultural Associations' meeting; United Horticultural Benefit and Provident Society's Annual Meeting; Burnley Horticultural Society's meeting; Harrogate Horticultural Association's meeting. TUESDAY, MARCH 13: Royal Horticultural Society's Committees meet (two days). WEDNESDAY, MARCH 14: Messrs. Austin and M'Aslan's Spring Flower Show (three days); Sheffield Chrysanthemum Society's meeting; Wimbledon Gardeners' Society's meeting. THURSDAY, MARCH 15: London Gardens Guild Lecture; Linnean Society's meeting; Ipswich Gardeners' Association's lecture. SATURDAY, MARCH 17; Paisley Florists' Society's show; Bolton Horticultural Society's show.

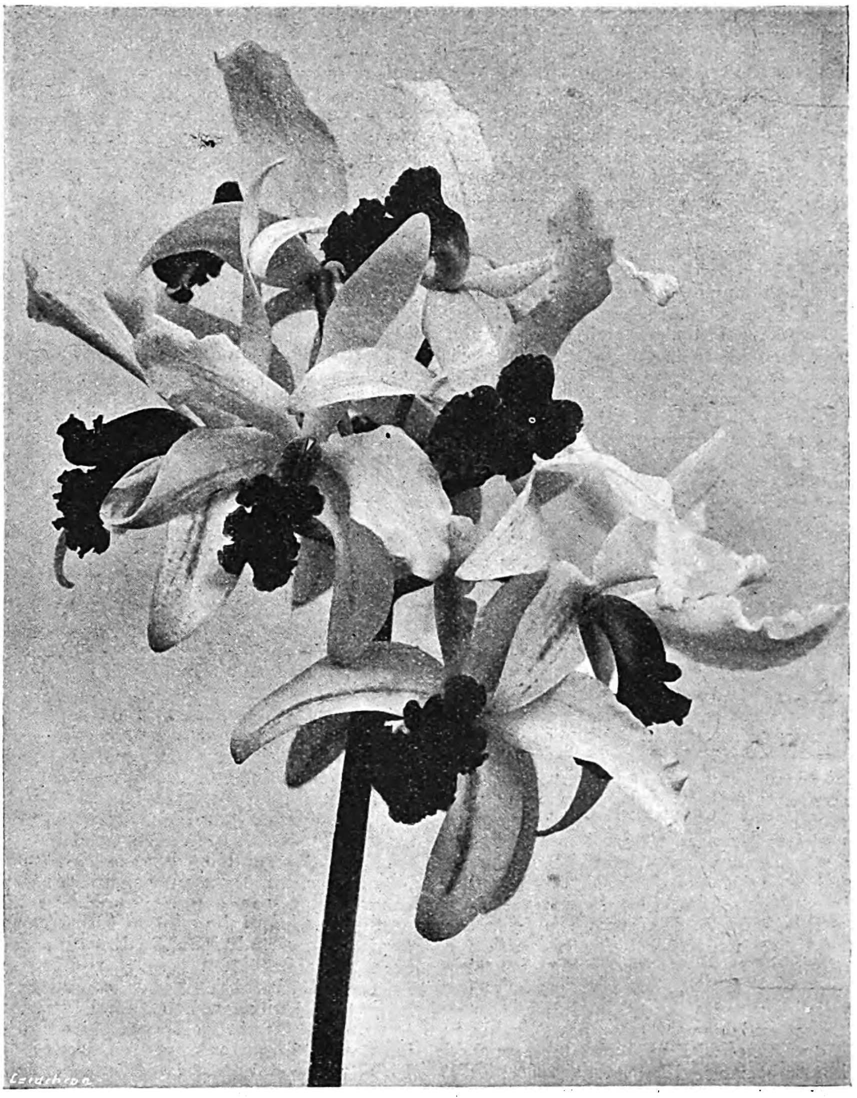

FIG. 85.—LAELIO-CATTLEYA GWENDOLEN LEACH.

R.H.S. Award of Merit. February 28. Flowers orange gold and ruby-crimson. Shown by Frederick J. Hanbury, Esq. (gr. Mr. Farnes), Brockhurst, East Grinstead. (see p. 162).

"Gardeners' Chronicle" Seventy-five Years Ago.—*On Changing the Names of Fruits.*—Pray, Mr. Editor, raise your voice against the alteration in the names of fruits, as you have done against other innovations; let us by all means adhere to the last edition of the Horticultural Society's Catalogue. I ask this because, on recently looking over "British Pomology," published in 1851, I find Norfolk Beaufin Apple (in old times it was a "good end," or finishing Apple), made Beefing, from the similarity the dried fruit presents to raw beef; pray, who would buy beef looking like a baked Apple? It would to a certainty be brown beef. Then we have our dear old Jenneting or Juneating made into Joannetting, perhaps because it was the favourite of Joan, the wife of Derby; at least, this seems as good a derivation as any given. In the good old times of warm summers, when, according to Langley, the May Duke Cherry ripened in May (old style), this Apple ripened in June and was a Juneating Apple, dear to every boy as a Jenneting; let us, therefore, throw over Joan entirely. Again, the King of the Pippins is made Golden Winter Pearmain; now, this Apple is so generally diffused under the former name that the attempt to adopt the latter will lead to infinite confusion; we have no business with Dr. Diel's German name; besides, the Catalogue of the Horticultural Society is the best authority for all English pomologists, and we must make it our sole authority, if we wish to avoid much trouble and confusion; there are a few errors in it which will doubtless be corrected in a future edition, at present let us adhere to it, and our good old names. *Pyrus.* [We must say that such changes as our correspondent alludes to, or any such silly alterations, reflect no credit upon the judgment of the author of "British Pomology," and throw distrust over anything that may be good in his book. *Gard. Chron., March 5*, 1853.

Publication Received.—*Chrysanthemum Culture.* Re-written and brought up-to-date by H. J. Jones; The Bazaar, Exchange and Mart, Ltd., 4-8, Greville Street, E.C.1; price 2/-.

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN MOORE, Manchester.

Temperatures.—With the increased amount of sunshine and the consequent rise in temperatures, more damping of the floors and staging of the Orchid houses will be necessary, but the plants should not be forced unduly by any excess of heat and moisture. Care should be taken to avoid great fluctuations of temperature by paying strict attention to ventilation and shading; if at this season of the year it becomes necessary to lower the blinds to prevent injury to tender foliage, it is advisable to close the ventilators for a time to avoid a drastic fall in the temperature. Control over the fire-heat is necessary owing to the rapid changes in weather conditions that are experienced at this time of the year.

Cymbidiums.—The species and hybrids of these popular Orchids provide an attractive display of flowers for the spring months; the lasting properties of the flowers, both on the plant and when cut, are well-known, and Cymbidiums are among the most useful Orchids for decoration. If a house is set apart for them, their requirements are easily maintained; if given cool treatment with ample ventilation, a buoyant atmosphere and shaded from very strong sunshine, they will give good results. Well-rooted plants require copious supplies of water at the roots, especially when bearing flower spikes; after flowering less water is required, but extreme dryness at the roots should be avoided. If these Orchids have to be grown in the Odontoglossum house, it is advisable to give them a separate position, where they can be given ample light and air, to assist the ripening of their bulbs; dense shading may produce large plants, but will discourage flower production. These Orchids are subject to attacks of red spider during hot weather, and they should therefore be judiciously watered and syringed. Should the leaves be attacked, sponging with soapy water is the best remedy, as the use of any wash strong enough to penetrate the web under which the pest works will cause permanent injury to the leaves. A small scale insect often infests the plants and should be removed so soon as detected, for it increases rapidly. Cymbidiums dislike root disturbance, therefore any repotting should be done with a view to the plants remaining undisturbed for two or three years. Repotting may be done when flowering has ceased and the plants are commencing to grow again, a suitable compost being three parts fine loam and one part fine fibre; if this is used in a dry state, with plenty of fine, crushed crocks, it can be worked in amongst the fleshy roots without injuring them. Careful watering is required until the roots are well-established, when the supply may be increased.

THE KITCHEN GARDEN.

By ALLAN FAICONER, Gardener to the Cheadle Royal Mental Hospital, Cheadle, Cheshire.

Mint.—Spare frames, if placed over the permanent Mint bed, will result in the production of growths to form a succession to those from the plants which were lifted and placed on hot-beds. Both the growth and colouring of Mint may be assisted by the application of a top-dressing of nitrate of soda as growth commences.

Early Peas.—In warm soil and a well-sheltered position, seeds of a dwarf variety may be sown, to produce an early crop; if the soil is naturally cold, sowing of the seeds in boxes is the better method. The ground should have been deeply trenched and well manured. To protect the seeds from vermin they should be moistened with paraffin, and then coated with red lead; this method is usually effective. A round-seeded variety is best for very early sowing, and the space between the rows may be cropped with Spinach. Varieties for exhibition purposes may be raised in boxes, to be planted in the open ground when conditions are favourable.

Vegetables for Forcing.—Seeds of a Turnip-rooted variety of Beetroot may be sown on a gentle hot-bed in frames, to produce an early supply, while either Lettuce or Radish seeds may be sown between the rows. Successional sowings of seeds of Carrot, Turnip and Radish may be made in frames placed over gentle hot-beds, or beds of leaves. Marrows may also be raised for planting on these beds, or for growing under similar conditions to Cucumbers, on a trellis in a house where a temperature of 55° to 60° may be maintained. It is sometimes possible to find odd places in the houses where a few Marrow plants in ten-inch pots can be stood. They should be tied to stakes and encouraged to produce free, robust growth; the shoots should be stopped, while the flowers require to be artificially fertilised.

Horse Radish.—Prepared thongs, about nine inches long, of this vegetable may now be planted in ridges, as previously advised. The top growths should be reduced to one, while, if the thongs are planted in an upright position, with the crowns one inch below the surface, they will make better roots than if they are planted in a slanting position.

Paths.—So soon as the kitchen garden has been put in order, ready for the various crops, attention should be given to the paths that are often in need of repair after the winter carting and wheeling. A well-ordered kitchen garden even at this time of year, should present a good appearance.

FRUITS UNDER GLASS.

By T. PATEMAN, Gardener to SIR CHARLES NALL-CAIN, Brocket Hall, Hertfordshire.

Figs.—Trees growing in borders that were started into growth early in January should by now have fully developed foliage, and the young fruits will be swelling freely. To obtain the best results, it is a great mistake to allow the most fertile trees to carry all the fruits they produce; judicious thinning of these should be done before they develop. Pinching and disbudding are important features in the cultivation of this fruit. Disbudding may be attended to when the shoots are three inches in length; it should be done gradually, the aim being to prevent any overcrowding of the growths. Brown Turkey is one of the most prolific Figs, and is, in my opinion, one of the best for early forcing. By judicious feeding two crops of fruits may be taken from early forced trees, in fact, if pinching of the growths is done at intervals, fruits will be forthcoming almost continuously during the growing season. Feeding is a very important matter, for, as a rule, Figs are grown in restricted borders, and unless they are aided by the use of liquid or some other stimulating manure, it would be almost impossible to secure even two good crops of fruit.

Successional Vineries.—Vines will now be in all stages of growth, and attention should be given to those that are just commencing, removing some of the superfluous buds. For the time being, and until the bunches of fruits are plainly seen, it will be wise to leave two shoots on each spur, especially where they are badly placed. Guard against high night temperatures, especially if the nights are cold, 55° to 60° being the most suitable temperature at this stage of growth. On fine, sunny days the top ventilators may be opened, and the vines may be syringed overhead with tepid rain-water. Close the house early to conserve so much of the sun's warmth as possible, for heat derived from this source is most beneficial to growth.

General Remarks.—Cucumbers that were raised early in the year will now be producing good crops. It is unwise to crop these too heavily at any time, for by judiciously thinning the fruits far less irregular specimens will be forthcoming. Farmyard manure, applied in liquid form, will tend to keep the plants in a healthy, fruiting condition. Syringe the plants whenever the outside conditions will allow, for Cucumbers delight in a hot, moist atmosphere. Another sowing of Tomato seeds may be made; by the time the resultant plants are ready for planting, available room in the house will be forthcoming, and these plants will produce fruits well into the autumn.

PLANTS UNDER GLASS.

By J. COUTTS, Assistant Curator, Royal Gardens, Kew.

Mitriostigma axillare (syn. Gardenia citriodora).—This plant is producing its deliciously scented white flowers at the present time, and is a distinct subject that deserves to be more generally cultivated. It succeeds under the same treatment as applied to Gardenias, and when in flower may be placed in a greenhouse. Cuttings root readily in a warm propagating case, but terminal shoots should be secured, for although lateral ones root readily, they do not develop leading growths.

Clivias.—These may be had in flower over a long period if they are grown in successional batches, keeping the plants in a cool house and introducing them to a warm house as they are required. They make fine, large specimens if planted in beds or borders in the conservatory.

Cyclamens.—Young plants that were raised from seeds sown last August, and wintered in boxes or pans, should now be ready for potting into thumb pots. If they were potted during last autumn, they may now require moving into larger pots, using a compost of three parts loam and one of leaf-soil, with sufficient sand, or better still, some old mortar rubble; if this is not available a dusting of lime should be added to the soil, for I consider that lime is essential for Cyclamens. The young plants should be kept close to the roof-glass, and should be carefully watered. Cyclamens at all times enjoy a cool, moist atmosphere.

Luculia gratissima.—This beautiful greenhouse shrub may be successfully propagated at this time, or so soon as cuttings of young shoots, about three inches long, can be obtained. The cuttings must not on any account be allowed to flag, for they are difficult to root. They should be inserted singly in small pots and placed in a closed case with bottom-heat. This plant is very difficult to grow successfully in pots; it gives the best results when planted in a well-drained bed in a cool greenhouse, where it may be either grown as a bush, or trained on a wall. After flowering it should be kept somewhat dry at the roots for a time, and when starting into growth during the spring, it should be pruned back. It is very subject to attacks of Begonia-mite and white fly, both of which must be guarded against.

Chrysanthemums.—Where it is desired to grow a batch of plants in small pots for the stages, the cuttings should be rooted during this month. Dwarf and bushy varieties are best suited for this purpose, all the Caprice du Printemps forms being good. A number of the large-flowered Japanese varieties may be treated in this manner; if they are stopped once during May they will produce one good bloom. The decorative varieties should be stopped several times, and require strict attention at all times to watering and feeding if they are to retain their foliage in good condition.

Veronica Hulkeana.—This species is undoubtedly the most graceful of all the shrubby Veronicas, and it is very beautiful when well-grown in pots. Cuttings should be rooted now in a cool house; if the young plants are pinched several times and grown out-of-doors during the summer, they should make good flowering plants, in five-inch pots, for next spring. Plants that were raised last year should be shortened back and potted on after flowering; they will make fine large specimens. The many fine varieties of Veronica speciosa are also excellent for autumn-flowering when grown in pots.

HARDY FRUIT GARDEN.

By T. E. TOMALIN, Gardener to the EARL OF BESSBOROUGH, Stansted Park, Emsworth, Sussex.

Alpine Strawberries.—These perpetual-fruiting Strawberries provide welcome dishes of dessert fruits when the main crop is over. For this purpose the flowers should be removed until the end of June; the plants will then continue to bear fruits throughout August and September. The small fruits have a distinctly piquant flavour, and are greatly appreciated. The best method of raising these alpine Strawberries is from seeds sown now, in gentle heat. The seedlings should be pricked out three inches apart into boxes of medium compost so soon as they are large enough to handle. When they are established they should be gradually hardened off and planted in the open border during May.

Grafting.—Trees of Apple or Pear which are not producing satisfactory crops may now be headed back and top-grafted with more desirable varieties; provided, of course, that both roots and stem are healthy and vigorous. It is important that the stock should be slightly in advance of the scion in sap activity; for this reason scions are usually selected during the winter and buried to half their length in the soil on the north side of a wall, until the stocks to be grafted show the first signs of growth. If the trees were partly cut back during the winter, a fresh horizontal cut should be made where the scions are to be inserted. Rind- or crown-grafting is the most suitable method to employ for top-grafting old trees. The scion should be cut wedge-shaped at the end to be inserted in the stock, and in the latter a perpendicular cut, right through the bark, should be made, a little longer than the shaped portion of the scion. The bark on each side of the cut should then be carefully prized back sufficiently to admit the scion, using the wedge-shaped handle of a budding-knife or similar implement for the purpose. The bark should then be closed over the scion, taking care that the inner bark, both of the stock and scion, are in contact—this is the most important point in grafting. Another method that may be adopted for older trees is triangular notch-grafting. This, as its name implies, consists of cutting a triangular notch in the side of the stock, into which the similarly-shaped end of the scion is fitted exactly. Where the limb which is being grafted is more than two inches in diameter, it is advisable to insert two or even three scions around it to ensure that a callus will eventually cover the whole of the cut portion, otherwise the stock will in time decay and die. The union of stock and scion should be closely bound with good raffia, and completely covered with well-prepared clay, or grafting-wax, to exclude the air; grafting-wax is, perhaps, preferable, because it does not crack during hot, dry weather.

General Work.—If any trees were planted while the soil was not in the best condition, they should now be examined while the ground is dry. Remove the temporary mulch, and tread or ram the soil firm, then replace the mulch, and see that the stake and tie are adequate. Newly planted trees may now be pruned.

THE FLOWER GARDEN.

By J. G. WESTON, Gardener to the DUKE OF DEVONSHIRE, Chatsworth, Bakewell, Derbyshire.

Climbing Roses.—The annual pruning, or thinning, necessary for the more rampant growers of this popular family, is not always carried out on rational lines; totally different treatment is required to that accorded to Hybrid Teas and others of that type. When growing in the wild garden, where they may be allowed to wander without restraint, all that is necessary is to remove dead, or very old, wood. When the Roses are growing on pergolas, etc., where they must of necessity be restricted, a certain amount of pruning is absolutely necessary. For pruning such plants, undoubtedly the best time of the year is immediately after the flowering period, although in practice it is usually found more convenient to carry out the work in early autumn. If this has not been done it can with advantage be carried out now, before the new growths are too far advanced. Established Rose trees in good health will require the old wood cutting out right from the base, if possible; the young growths may also be thinned to the number necessary to fill the allotted space. The result of this hard pruning will be that the whole of the plant's energies will be directed into the young shoots, which will eventually grow at an amazing rate, and the after treatment simply consists of training the shoots. Of the climbing Polyantha and Multiflora Roses, a suitable selection is Blush Rambler, Moonlight, Tausendschon, Shower of Gold, American Pillar, Braiswick, Beauty, and Pemberton's White Rambler.

Wichuraiana Roses.—This charming section may be recommended as the hardiest of the climbers, and they are therefore well-adapted for planting in exposed situations where less robust varieties would not succeed. In mild seasons they are practically evergreen, retaining their handsome, glossy foliage until well into the winter. Although they are not particular as to soil, it is well to give them a good start in good, sound loam. Of this class, Alberic Barbier, Jersey Beauty, Braiswick Charm, Dorothy Dennison, Hiawatha, Dorothy Perkins and White Dorothy, Excelsa, Lady Godiva, Minnehaha, Leontine Gervais, and Emily Gray may be relied upon as suitable for all kinds of garden decoration. A capital method of clothing a steep bank is by planting a selection of these hardy and rampant growers, and letting them grow practically wild.

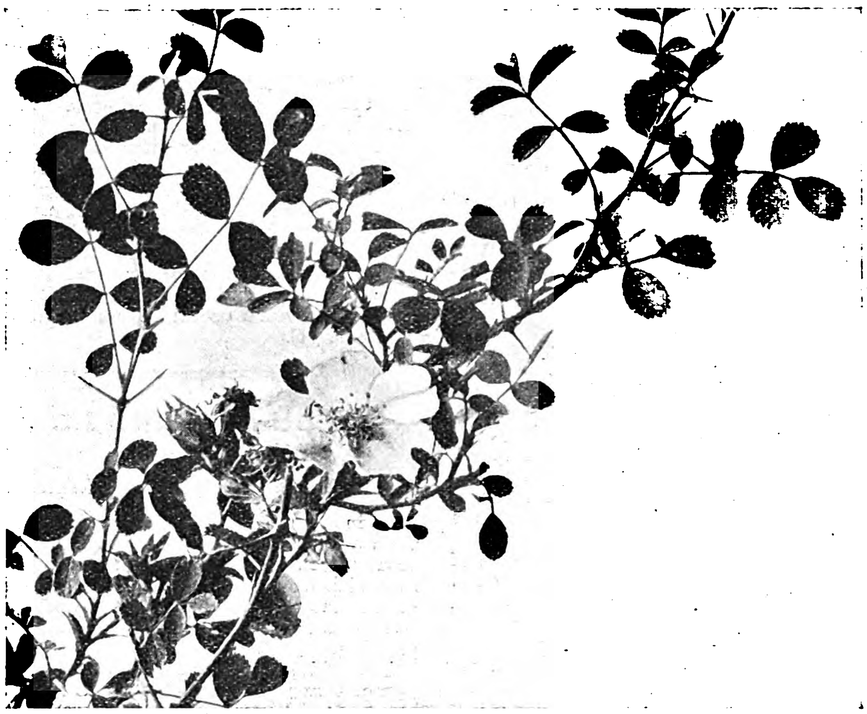

FIG. 86.—ROSA MULTIBRACTEATA.
(see p. 173).

FOR NORTHERN GARDENERS.

By A. T. HARRISON, Gardener at Jordanhill Training Centre, Glasgow.

Herbaceous Borders.—A top-dressing of well-decomposed manure should now be applied to the herbaceous borders and lightly forked in, or if manure of this kind is not procurable, a top-dressing of old potting soil, mixed with a liberal quantity of artificial manure, will be found to have a beneficial effect. It is better, before applying either, to go carefully over these borders, and reduce to reasonable dimensions any plants which are monopolising more than their share of the ground, for many of the stronger-growing and spreading kinds, if left alone, will soon cause serious overcrowding. The positions of all late starting plants, such as Liliums, Incarvilleas, and Podophyllums, should be clearly indicated by means of stakes or labels, so that these may not be unduly disturbed during the process of forking the borders. Where perennial weeds are a source of trouble every visible portion of their roots should be taken out; where clumps are infested with Gout-weed, especial care is necessary.

Autumn-sown Onions, etc.—These should now be transplanted into well-prepared and enriched ground, in rows one foot apart, with from four to six inches between each plant. Close planting is an advantage with this useful type of Onion, because as they grow alternate plants may be pulled for early supplies, leaving the remainder to furnish the crop for later use; they are not subject to the ravages of the Onion-fly, and may be grown where it is very difficult to produce good crops by spring sowing. Where spring sowing of Onions out-of-doors is usually successful, the first opportunity should now be taken, when the soil is in good order, to make the soil thoroughly firm by treading, as a firm root-run is necessary to produce good Onions. Many remedies or preventives have been tried to keep the Onion-fly from depositing its eggs among the seedlings, and one of the best and simplest is to scatter broadcast over them, at fairly regular intervals, a mixture of soot and lime—three parts of soot to one of lime, until the egg-laying period is over. Onion seedlings growing in boxes, from seeds sown early under glass, should still be kept growing in a moderate temperature, but so soon as they are large enough they should be hardened off.

Pruning and Tying Fruit Trees on Walls.—These operations should now be nearly finished. Morello Cherries and other fruit trees growing on north walls are usually left to the last, for obvious reasons, but they may now be attended to in comparative comfort. Fig and Peach trees that are growing on sunny walls should be carefully fastened into position, as the sap is rising rapidly, and the flower-buds on the latter are very easily rubbed off if left too late. Red Currants and Gooseberries, trained on north walls, provide useful supplies of late fruit if carefully netted when nearly ripe, for in such positions the fruits hang and keep well long after those on plants growing in full sun are past.

INDOOR PLANTS.

BROWALLIAS.

THERE are several species of Browallia that are very useful for conservatory and greenhouse and home decoration; B. speciosa major, B. viscosa, B. demissa, B. Roezlii and B. elata, of which there is a white variety, are all easily grown annuals, and seeds may be sown now in a cool greenhouse.

If more seeds are sown during June, the resulting plants will afford a good display during autumn and early winter.

Browallias respond well to cool-house treatment, and they will form well-shaped, bushy plants if they are stopped several times.

Browallia Jamesonii, more correctly known as Streptosolen Jamesonii, is a shrubby plant that may be grown into large specimens for the conservatory; it is most effective when planted in a border and trained up a side of the house, where it will have full exposure to all possible sunshine. Under these conditions it will produce masses of orange-coloured flowers that later become almost scarlet.

It is easily propagated by means of cuttings, and young plants that were raised last year may be flowered in six-inch pots during the present season. *J. C.*

ANTHURIUM SCHERZERIANUM.

WHILE the large-leafed and large-spathed members of the genus Anthurium need considerable head-room and may only be grown where a spacious stove is available, A. Scherzerianum is of dwarf, compact habit, and a valuable plant for the embellishment of a small, well-heated house. It is also much more free in the production of spathes than the larger-spathed section, and as the spathes are of a brilliant scarlet and remain in good condition for a very long period, they are invaluable as cut flowers. This Anthurium will be found to thrive in a mixture of Sphagnum-moss and fibrous peat, well mixed together in about equal proportions with a moderate addition of charcoal nodules.

The pots or pans should be filled to about half their depth with crocks and the base of the plant elevated an inch or two above the level of the rim. If the surface of the compost is covered with living Sphagnum-moss, the carpet of green will materially enhance the appearance of well-developed specimens when they are in flower, while the humidity arising from it is highly conducive to healthy growth. To ensure the plants flowering early in the winter, they should be encouraged to grow early in the spring by placing them in the warmest part of the stove or affording them the assistance of a little bottom-heat, if such is available. *A. P. C.*

CALADIUMS.

THESE attractive plants are much appreciated for their handsome and coloured foliage. If they are required for glasshouse decoration purposes, the dry tubers may be started in a warm house with a temperature of 60° to 65°. The tubers may be placed directly into small pots, or they may be laid in boxes of leaf-soil or fibre to start them into growth, when they may be potted. As growth progresses they should be shifted into five-inch or six-inch pots, or larger ones still if big specimen plants are required.

Caladiums enjoy a rich, open compost of turfy loam, fibrous peat, leaf-soil and sand, with the addition of a little well-decayed manure. When they are growing they require a temperature of 65° to 70°, and ample atmospheric moisture, with slight shade during the brightest part of the day; shading must not be overdone or the leaves will not develop their full colour.

As growth matures they should be accustomed to cooler conditions, and when the plants commence to die down water should be gradually withheld until they are dried off. During winter they should be stored in a temperature not below 55°.

There are numerous attractive varieties, but the small elegant species C. argyrites, is especially so. It has green and white leaves, and was at one time largely grown and much esteemed for table and general decorative work. *J. C.*

ORCHID NOTES AND GLEANINGS.

ORCHIS LONGIBRACTEATA.

AMONG the several terrestrial Orchids which deserve a place in gardens, Orchis longibracteata (Fig. 89, p. 175) deserves a place. It is a native of the Mediterrannean region, and in a wild state usually flowers during the three early months of the year. Its stature and the boldness of its rounded foliage make O. longibracteata a giant among terrestrial Orchids, as a spike may be so much as eighteen inches tall. The individual flowers are fairly large and quaintly formed, the three-lobed lip having its apical portion again divided; indeed, when a fully opened flower is viewed from the front it presents the appearance of a wee. misshapen dwarf, such as one has read about in an old-time fairy tale.

The flowers of O. longibracteata are intermingled with long, slender, greenish bracts, hence the name; they appear to vary in colour but are usually of a rather dull purplish rose or mauve, with green tinting. One of the plants exhibited by Major Pam at the recent meeting of the Royal Horticultural Society was practically an albino as the colouring of the flowers was white and reddish green.

How far O. longibracteata has proved hardy in this country, or amenable to cultivation out-of-doors, it would be interesting to learn. Major Pam's plants were in pots and, presumably, had been grown in a frame or cool house. The tubers were collected in Morocco a year or so ago. There is a fine, coloured illustration of O. longibracteata on Pl. XLVII, in M. Henri Correvon's useful *Album des Orchidées d'Europe*. *C.*

BULB GARDEN.

HYACINTHUS AMETHYSTINUS.

IN many gardens this delightful little bulb finds a welcome place, and when seen in large groups or masses it is very effective. It grows from eight to twelve inches in height, sometimes rather more, and has clusters of drooping bells of a lovely shade of sky-blue that are most pleasing.

The white variety, H. a. albus, is neither common nor plentiful, but few will value its blooms so highly for their beauty as they will the lovely flowers of the type, that are produced during May or June. A light but rich soil and a warm, sunny position will give H. amethystinus the conditions it desires.

It is a native of the Pyrenees and Southern Europe and is quite hardy. This little bulb may be procured with other bulbs in the autumn, and may be planted about two inches deep.

GALANTHUS BYZANTINUS.

IN autumn of last year, Mr. P. R. Barr sent me some bulbs of Galanthus byzantinus, and these have been in flower for some time in my rock garden. The flowers are of great size and beauty and fully confirm what has been said of them by others.

I have been particularly interested in them, as some twenty-three or twenty-five years ago, I had bulbs of a Snowdrop sent me by Mr. Van Millingen, when he was at Broussa. These proved most interesting for they were evidently intermediate between G. Elwesii and G. plicatus. They had been collected in a district where these two species grow together, or near each other, and these Snowdrops were a most varied collection, some possessing characteristics of one, and others of the other, in a more or less marked degree. The best of them were quite good, especially those coming nearest to the Crimean Snowdrop, G. plicatus.

At that time I formed the opinion that the best of these corresponded with G. byzantinus, and the late Mr. James Allen, of Shepton Mallet, and the late Mr. W. B. Boyd, of Faldonside, both authorities on the Snowdrop at that time, agreed with me, but although I had a good many bulbs, none of the flowers were so good as those produced by those I had from Mr. Barr.

I look upon G. byzantinus, as now sent out, as being one of the finest of the Snowdrops we have, and I hope that it may prove to have a good constitution; it certainly promises well in this respect. *S. Arnott.*

COLCHICUM CROATICUM.

AN early spring-flowering Colchicum is unusual, and this charming little plant, which provides leaves with its flowers, is both welcome and interesting. Three bulbs sent here in July, 1927, by Mrs. Dykes were planted in a nursery bed of stiff loam, sharp sand being placed under each bulb. On February 18, four flowers opened. They have had no protection and have endured very inclement weather. The perianth of six segments is ovate-lanceolate, with blunted tips, the opening bud is a faintly-flushed, delicate mauve shade which fades to white in the mature flower. The slender tube of the flower is of cream colour. The filaments of the stamens are white, the outer coats of the unopened anthers have a curious blue sheen, which, when they have split, turns to a chocolate colour—a strong contrast to the golden pollen. The leaves are neat, of thick substance, and dark olive-green with red markings at the edges.

Our plants of Colchicum croaticum are from two inches to three inches high, and very suitable for a pocket in the rock garden. They withstand wind with a firmness unknown to the Crocus species. Mrs. Dykes obtained an Award of Merit for C. croaticum in February, 1927, and her plants were figured in *The Gardeners' Chronicle*, Vol. LXXXI., p. 127. She has found the species very hardy and, as it flowers freely for some weeks, it is a most desirable plant. *Phylis Moore, Willbrook, Rathfarnham, Co. Dublin.*

HARDY FLOWER BORDER.

CENTAUREAS.

THESE form a genus of interesting and showy hardy herbaceous perennial plants, varying in height from two feet to four-and-a-half feet, that are of quite easy cultivation in any good ordinary garden soil.

The Mountain Cornflower, C. montana, is well adapted for the herbaceous border, and quickly forms spreading tufts of greyish foliage, surmounted by branching sprays of large flowers, those of the type being blue.

Others that might be included are C. alba grandiflora, pure white; rosea, rubra and sulphurea, all of which are highly ornamental in the border, and are prized as cut flowers from June onwards. Amongst the taller-growing species we have C. dealbata, a delightful Caucasian species growing from two feet to three feet high, with handsome silvery foliage and pretty, rose-coloured flowers.

C. babylonica is a tall-growing Knapweed, five feet or more in height, flowering from July to September, and is an unique subject for the sub-tropical garden. Its foliage is finely cut and of a silvery hue, while the Thistle-like heads of yellow flowers are held erect.

C. glastifolia is another good border plant of rigid, upright habit, with greyish foliage and sulphur-coloured flowers produced during July and September.

Another very elegant species is C. ruthenica, with funnel-like, glossy foliage, and straw-coloured flowers from July onwards; while C. macrocephala, the Giant Knapweed, is a useful plant for the shrub border or an isolated position where ample room may be given to display the large foliage and branching heads of golden-yellow flowers.

All these Centaureas may be propagated easily by division, or they may be raised from seeds. *W. Logan.*

FLOWER GARDEN.

PENTSTEMONS.

The garden varieties of Pentstemon have principally been derived from P. Cobaea and P. Hartwegii, although other species may have had something to do with their origin.

They are useful summer-flowering plants, and may be used for a variety of purposes, such as the furnishing of formal beds and borders, and for grouping in other flower borders.

Pentstemons are not fastidious plants, but they will well repay liberal treatment; they require a well-drained loam, enriched with leaf-soil and decayed manure.

Propagation is easily effected by inserting cuttings during August and September in a cold frame; there they may remain until spring, when the resultant sturdy plants may be set out in the prepared stations. Excellent results are obtainable from seeds of a good strain; if these are sown in February or March they should produce plants to flower during the late summer and early autumn.

Of the older named varieties, there are Archibald Forbes, magenta with white-pencilled throat; Pilrig Park, rosy-purple, blotched throat; Robert Dodds, reddish-crimson, pure white throat; William Miller, cherry-crimson, white-blotched maroon throat; Candidate, scarlet with white throat; King of Pentstemons, violet, white pencilled throat; Miss F. Hope, white, suffused pink; Miss Watson, dark purple, throat chocolate, pencilled white; Mrs. Green, rose, pure white throat, and Mrs. Mann Thomson, blue, throat pure white.

There is at present a tendency, perhaps wisely, to concentrate upon a few well-tried varieties, notably George Home, Chester Scarlet, Newbury Gem, Southgate Gem and Mydleton Gem, but these are not, of course, true florists' varieties. Such species as P. Kellermanii and P. heterophyllus may also be used for garden decoration. *Ralph E. Arnold.*

ALPINE GARDEN.

DIANTHUS CALALPINUS.

Hybrids in the Pink family are very numerous, crossing, as the various species do, very readily by means of insect agency. The one under notice (Fig. 87), however, is of outstanding merit, and the result of crossing D. callizonus with D. alpinus. Both these species are beautiful plants, the former being dwarf-growing, with broad, greyish leaves, and having large, pink flowers with a dark belt of crimson spots at the base. It does well in gritty soil, but requires a shady position. D. alpinus forms neat, compact tufts of glossy-green leaves, and bears large, handsome, rose-coloured flowers spotted with crimson, on stems about three inches high. It likes a half-shady position in moist, sandy loam of a gritty nature.

The hybrid D. calalpinus is of intermediate character, of fairly robust habit and easy to grow. The flowers vary in colour and in the density of the crimson band of spots at the base of the petals. It may be increased by means of cuttings after it has done flowering. *W. I.*

HELONIOPSIS BREVISCAPA.

Of the few species of the genus Heloniopsis, two have been in cultivation, but the only one which I see quoted in catalogues is H. breviscarpa, and it is quite rare. It is not a showy plant by any means, and, as it appears slow of increase, it is not likely to appeal to a great number of gardeners.

It is a native of Japan, and grows about six inches or eight inches high; it has narrow, strap-shaped leaves, and small spikes or heads of little flowers, packed close together. Its spike is shorter than that of the other species, H. japonica, but the blooms are more closely arranged. They are white, sometimes tinged with pink, and appear in spring.

I grew this plant for several years in a low, moist position at the base of rockwork, where it received very little sun, and in a soil composed of loam, peat and sand, giving it water during very dry weather. It flowered regularly but made no increase at the root. Although not of striking beauty, Heloniopsis breviscapa is a plant which may appeal to the grower of alpine plants who does not confine his interest to those from high altitudes.

ANDROSACE SARMENTOSA WATKINSII.

Every now and again in the cultivation of alpine plants, we have experiences of plants thriving under what might be considered most adverse conditions that are utterly opposed to orthodox treatment. Such has been the case with me this winter with the fine variety of A. sarmentosa called Watkinsii. As is well-known, the orthodox cultivation of the forms of A. sarmentosa, and a good many others of this charming genus, calls for the provision of a good, warm, sandy loam, or moraine conditions, with, in the wetter districts, the advantage of glass protection overhead to ward off the rain.

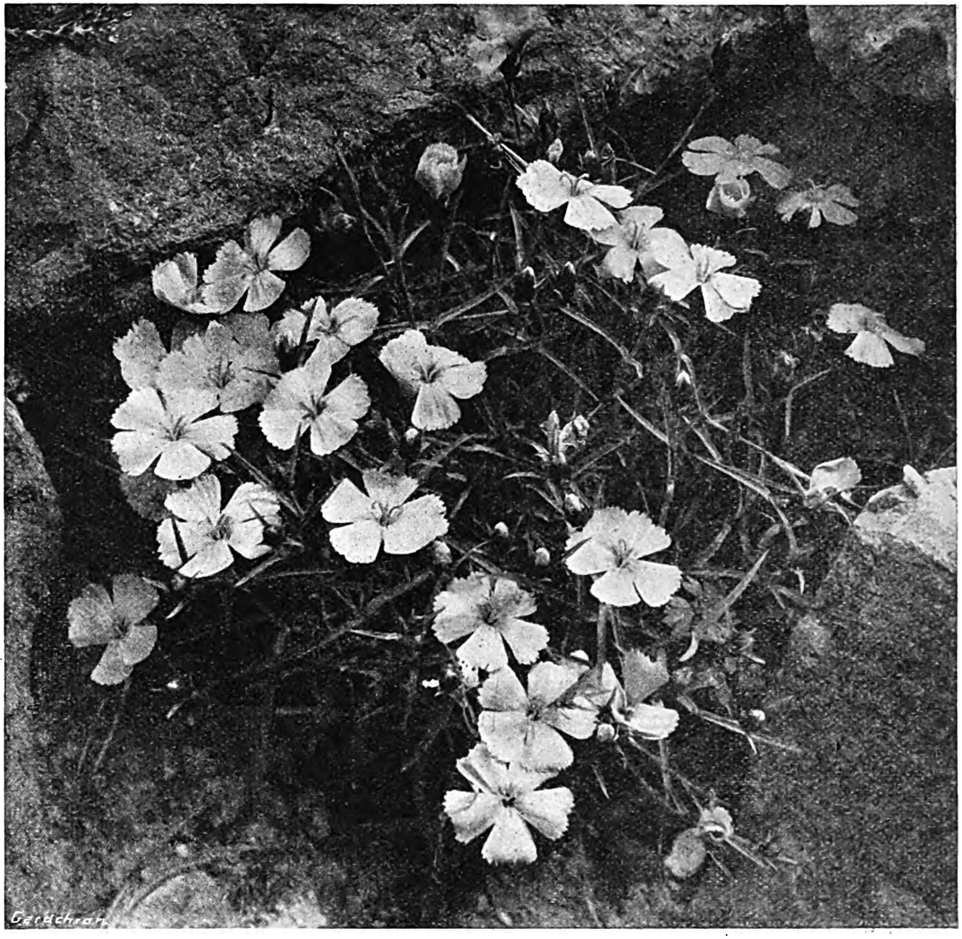

FIG. 87.—DIANTHUS CALALPINUS.

I have a plant of this Androsace that has been growing on a rocky bank in heavy loam, and fully exposed to rain and storm during the past winter. In January we had an excessive rainfall, a station nearby recording nearly eleven inches, nearly seven inches above that of January, 1927. Notwithstanding the weather, this specimen is in perfect condition, and, since it was planted last year, has made considerable increase.

There is some difference of opinion, it is true, as to whether my plant is the true Watkinsii; it is certainly not the one described by Farrer, who describes it as "a much smaller condensed form, with tighter rosettes about a fifth of sarmentosa's." My plant came from a very good source, and its correctness of name is supported by various descriptions to which I have referred. However this may be, it is a capital alpine with fine, silvery rosettes, becoming green afterwards, and delightful pink Verbena-like flowers.

SAXIFRAGA CYMBALARIA.

Lovers of alpine plants, as a general rule, look with some disdain upon annuals, and usually devote themselves to the culture of such plants as are of perennial habit. Yet it is folly to ignore the beauty and usefulness of some of these annuals, several of which are of almost gem-like loveliness, and will brighten many an otherwise dingy nook, while some are so obliging that they sow themselves with freedom and yet are not so rampant as to endanger the lives of their perennial companions.

Of such is the little plant known in gardens and offered by seedsmen as Saxifraga Cymbalaria. It should be termed S. Sibthorpii, if we are to accept the late Mr. Farrer's dictum, but it is hardly possible to think that his true S. Cymbalaria could be finer than this plant.

I have known and loved it for many years and, as justification for the remark above regarding self-sowing properties, I may say that I have had it in my gardens for twelve or fourteen years in succession without sowing it afresh. Surely a plant such as this is equal to, or superior to, many a much cared-for perennial!

It has a great partiality for shade and comparatively moist soil; I have tried it in sunny positions with little success. It has, however, the not uncommon idiosyncrasy of refusing to increase under certain conditions that are practically impossible to specify. Where it is happy it sows itself freely and scatters its seeds in such a way as to create informal groups, masses and individual plants. These have small, glossy leaves, and bright golden flowers. The flowers that are produced early in the season are almost sessile, but eventually the stems lengthen, and the later blooms are borne on stems three inches or four inches in height. Those who wish to try this annual Saxifraga cannot do better than sow seeds of it very thinly in crevices and on small terraces of shady rockwork, or in the crannies of a moist, retaining wall. *S. Arnott.*

A REVISION OF VIOLAS.

(Continued from page 160.)

V. PEDATA, L., is said to be the first of the American Violets to awaken the admiration of Europeans. Although well-known, and known in England for a long time, V. pedata has been the subject of a curious metamorphosis of names. The original plant of Linnaeus, which was the bicolor form, came from the Blue Ridge of western Virginia, where, as also near Washington, the best forms are found. In 1789, however, the *Botanical Magazine* published (t. 89) the concolor variety of the species as the species itself, and this error remained uncorrected until 1896, when Greene realised that the species as described by Linnaeus was what had commonly but erroneously been known as V. pedata var. bicolor. Hence the curious inversion by which the variety was known as the species, and the species as the variety. V. pedata should therefore be the more beautiful form in which the three lower petals are lilac, and the two upper violet. Farrer states that this "form" is hardly an improvement on the commoner concolorous form, in which all the petals are lilac, but it is doubtful if his opinion has been shared by anyone else. Being a most polymorphic plant, V. pedata has several named forms; for example, V. ampliata, Greene, from Florida and Louisiana, V. redunca from the higher hills of Georgia and South Carolina; and several named varieties, e.g., var. lineariloba, D.C. (concolor), var. flabellata (bicolor), etc. The distribution is wide—from Minnesota to Massachusetts, and from this, the Northern line, southwards to Florida and Louisiana. The habitat is dry fields and open spaces in woods. The species forms a class by itself, the distinguishing marks being the absence of runners, the strictly pedate leaves, the beardless petals, the very conspicuous orange stamens, and the absence of cleistogamous flowers. Its successful cultivation still seems to be subject to an element of chance.

V. PEDATIFIDA, Don., the Larkspur Violet, leads the way from V. pedata to V. palmata. It is known in cultivation under the synonym of V. delphinifolia, Nuttall. In spite of its name, the leaves are not strictly pedately divided, inasmuch as the middle segment of the leaf is always bisected, whereas in the pedate form this is never divided. The leaf-blade as a whole is primarily trisected, each of the three segments being again trisected, and each of the secondary divisions is cut into two to four lobes. Distinguishing marks such as these are particularly useful when plants are not in bloom to differentiate species such as V. chaerophylloides, which might otherwise be mistaken. V. pedatifida is a prairie plant, belonging to the eastern and middle States, and is found in Canada, in Saskatchewan, and goes so far south as Arizona and New Mexico.

V. PEDUNCULATA, Torrey and Gray, is the largest and finest of the yellow Violets. Brainerd states: "It is highly esteemed for its beauty, often cultivated in gardens, and the flowers are said to be often for sale in the market." It is therefore remarkable that it has not been introduced into England. I imported half a-dozen plants from California last year, but the month's journey was too much for them. Farrer's description of the leaves as "normal Sweet Violet leaves" would appear to be rather misleading, as they are in fact barely an inch long, broader than long, and very coarsely toothed round the whole of the rim. I find no mention, either, of the veneer of mahogany on the reverse of the uppermost petals, the whole flower being deep gold, darker, or with dark lines, at the throat. V. pedunculata is abundant from San Francisco Bay eastwards to the borders of Arizona.

V. PINNATA, L., is not exclusively an European species, as, although the type is found only in the European Alps, forms which cannot be specifically separated are widespread in Asia, from the mountains of Turkestan to northern China, and the far Siberian region of the Amur River. The only variation in the Asiatic forms seems to lie in a deeper division of the leaves and the smaller leaf-segments. Thus V. dissecta of Ledebourg, a Violet known to a catalogue here and there, is now placed as V. pinnata sb-sp. multifida; this is the form from Turkestan, China, the Amur, reaching to the Arctic Ocean, and ascending in places so high as 10,000 feet. I have had both seeds and plants of this, but, whether or not due to the difficulties of importation, nothing has resulted. Akin to the type and its sub-species, there are three other forms to which specific rank is given: V. incisa, with very broad, ovate, incised leaves and azure flowers, from the Baikal and Irkutsk regions of Siberia; V. dactyloides, a densely pubescent plant with large blue flowers and leaves which are digitately five-partite, a native of Manchuria and north-east Siberia, and found along the railway towards Harbin and Vladivostock; and V. chaerophylloides, which Farrer deals with as a variety of V. pinnata. The last, he states, jumps from V. pinnata to V. pedata; but botanically at least, there is no real connection. It is a large plant, growing to a foot in height, with large, fragrant flowers. The form of the leaves is very distinct; they are primarily trisect, the lateral segments bipartite, and the terminal one bi-tripartite—that is, first bisected, and then each of the two segments trisected. I had for long wished to obtain V. chaerophylloides, but had been unable to do so, but I had obtained a Viola under the name of V. dactyloides, which, when it grew to recognisable size, was undoubtedly V. chaerophylloides. It appears to be a luxurious grower, so I hope it is not so "miffy" as Farrer indicates. *E. Enever Todd, Lt.-Col.*

(To be continued.)

SOME DWARF RHODODENDRONS.

OF the many beautiful shrubs which have been introduced during recent years from China and Tibet, the dwarf, alpine Rhododendrons rank amongst the greatest of acquisitions. Coming as they do from altitudes of from 11,000 feet to 14,000 feet, they are in most instances perfectly hardy, and their charming flowers are borne on bushes of such moderate dimensions, that a very interesting and representative collection may be grown within the confines of an average villa garden. Moreover, the various groups of species offer a wide choice of colours, ranging through shades of yellow, orange, scarlet, crimson, purple, lavender, pink and white. These Rhododendrons are very effective in beds and borders, but when used as rock garden shrubs they are, perhaps, seen at their best, for those of exceptionally dwarf habit, such as R. repens, whose prostrate growths cling closely to the soil, and R. campylogynum and R. myrtilloides, whose plum-purple flowers require close inspection for their beauty to be fully appreciated, may be planted on raised positions convenient to the eye.

The dwarfer species of the 'Lapponicum,' and 'Saluenense' groups may eventually reach a height of from three feet to four feet, and as some of the smaller-leaved species may be grown in fairly sunny places, suitable plants may be selected to fill almost any position in the rock garden.

It should, however, be borne in mind that the climatic conditions of their native home are the reverse of ours; for Tibet is a country of dry winters and wet summers. A constant remembrance of this fact when choosing the planting site, and as a guide to cultural treatment, will save much disappointment, for efficient drainage in winter, and sufficient moisture in summer, are great factors in the successful cultivation, not only of the Chinese Rhododendrons, but of the Primulas and Meconopsis also.

The 'Lapponicum' Rhododendrons are also very effective if used as a groundwork for beds of choice Liliums. It is often recommended that Lilies be interplanted with something which will afford the growths some protection from spring frosts, but it is no easy matter to select plants that will neither harbour slugs to prey on the tender young growths as they break through the ground, nor overwhelm the Lilies with their own vigorous growth. The 'Lapponicum' species have neither of these drawbacks, and their slender growths and small leaves make them ideal plants for this purpose. Moreover, they furnish the beds during winter, and provide a charming floral display in spring, when the Lilies are at the dullest stage of their growth.

Many gardeners find the numerous species of Rhododendrons rather bewildering, for the points of difference between some of them are so small that correct identification is by no means an easy matter, and it is difficult to keep pace with the constant succession of new species. Nevertheless, should the cultivator make a mistake, he may console himself that he errs in good company, for the most ardent Rhododendron enthusiast is not always sure of his ground in distinguishing between some of the closely allied species, especially those of the 'Lapponicum' series. A representative collection of this series would include the charming R. impeditum, with flowers of lavender-blue; R. fastigiatum is so near R. impeditum that for garden decoration they may be coupled together. The clear lavender R. hippophaoides is a bog plant in its native home, but under cultivation it appears to be more tolerant of excessive moisture at its roots than most other species. R. intricatum, lavender; R. cantabile, rich blue-purple; R. scintillans, purple-blue; R. rupicolum, purple; R. parvifolium, rosy purple; R. verruculosum, purple; R. diacritum, with mauve flowers and very small leaves; and the two yellow-flowered species, R. chryseum and R. muliense, are all desirable.

The 'Saluenense' species form a very pleasing group, with flowers that are quite large in comparison to the lowly stature of the plants. The type species, R. saluenense, is a dwarf shrublet with violet flowers. R. keleticum is another dwarf, with spreading, mat-like growth and purple-crimson flowers, but perhaps the best known of the group is R. calostrotum, a charming dwarf Rhododendron with distinct, russet-grey foliage and cattleya-mauve flowers which vary in tone on different plants, the deeper shades being very fine. All the 'Saluenense' series are ideal plants for the rock garden.

The 'Cephalanthum' series form a very distinct group with fragrant flowers much resembling those of a Daphne. Two of the hardiest species are R. ledoides and R. sphaeranthum; they are erect-growing plants from two feet to three feet high, with white flowers that are sometimes flushed with pink. R. Sargentianum, coming as it does from an altitude of 10,000 feet, may not be quite so hardy, but it is well worth a slightly sheltered position. It has shining, Box-like foliage, and forms a small, dense, rounded bush, charming at all times, but especially so when studded with its small, yellow flowers, which in colour and form remind one of the rare Daphne aurantiaca.

The 'Campylogynum' group is perhaps more interesting than showy. The type species, R. campylogynum, and the closely allied R. myrtilloides, are well worth growing, for they are charming little plants, and their quaint flowers are very pleasing.

By far the most gorgeous of the dwarf Rhododendrons are contained in the 'Forrestii,' 'Haematodes' and 'Sanguineum' groups of the 'Neriiflorum' series. The 'Forrestii' group is well represented by R. repens, a compact and prostrate species, with startling, blood-red flowers, which in size and brilliance would not disgrace a large-growing Rhododendron. R. haematodes s certainly one of the best dwarf Rhododendrons in cultivation; it is stated to reach a height of four feet, but we have plants that have been flowering for the past seven years, and the tallest is as yet only fourteen inches high. It is a pleasing and shapely bush with rich, deep green leaves which form a particularly attractive setting for the brilliant red flowers. R. chaetomallum is another species of the same group with deep crimson flowers.

We are living in anticipation of the glories of the 'Sanguineum' group, for, although there are a goodly number of species in cultivation, the majority have not yet reached flowering age, but the orange-coloured R. dichroanthum—amongst those which have flowered—is a good augury of what we may expect, and this group may prove one of the greatest discoveries of the Chino-Tibetian flora. Amongst the species in cultivation, I may mention R. didymum, black-crimson; R. citriniflorum, lemon-yellow; R. brunneifolium, rose-carmine; R. leucopetalum, pure white; R. roseotinctum, white and margined rose; R. pothinum, crimson; R. scyphocalyx, coppery yellow; R. trichomiscum, pale rose-pink; and R. herpesticum, yellow and orange. These few will give some idea of the wonderful range of colour in this group.

Rhododendron racemosum, a species included in the 'Virgatum' series, may well find a place in every collection of dwarf Rhododendrons, but it should always be grown in an open position, for shade or shelter in any form will cause it to grow into a straggling, ill-shaped bush. R. racemosum has been collected in various localities and forms, but one of the best is a dwarf form collected by Mr. F. Forrest under No. 19,404.

I have omitted several beautiful dwarf Rhododendrons which are of doubtful hardiness, and have tried to confine myself to species that should be reasonably hardy in most parts of the country. Late spring frosts would probably prove the greatest danger in cold districts, but the small-flowered species, such as R. racemosum and those of the 'Lapponicum' series, are wonderfully frost-resistant.

When these dwarf Rhododendrons become more plentiful they will undoubtedly occupy a very important position amongst popular garden plants, more particularly as a number of the species do not show that abhorence of lime which is so characteristic of the Rhododendrons of Europe, North America and Sikkim-Himalaya, and from which most of the hybrid Rhododendrons of our gardens have descended.

Mr. Grove's interesting article entitled, "Rhododendrons and Lime," in *The Gardeners' Chronicle*, Vol. LXXXII, p. 426, must have been very encouraging to Rhododendron lovers who have not succeeded with the older species and hybrids because of the calcareous nature of their soil. As Mr. Grove readily admits, his experimental treatment was, perhaps, unnecessarily drastic, but the results are enhanced in value thereby, for they prove that certain species will exist under such severe calciferous conditions as they will seldom be subjected to in British gardens. Unfortunately, Mr. Grove appears to have tried only three species of dwarf Rhododendrons—R. campylogynum, R. haematodes and R. dichroanthum, but these are all included in the list of those which came through the experiment in a flourishing condition.

However, Mr. G. Forrest states that in west and north-west Yunnan, the greater number of Rhododendrons are growing on limestone, and amongst the species found by him on this formation are the following dwarfs:—R. campylogynum, R. brachyanthum, R. sanguineum, R. racemosum, R. sphaeranthum and R. ledoides. To these Captain Kingdon Ward adds certain species of the 'Lapponicum' and 'Saluenense' series, so that representatives of all the series I have recommended have been found growing on limestone in their native home, but whether only certain species or the whole group may be grown successfully under similar conditions can only be ascertained by experiment.

Of the 'Lapponicum' series, certain species are found growing in bogs, others on open moorland, while others are growing as woodland plants, but whether these various conditions are really necessary, or whether the plants have simply adapted themselves to the positions in which Dame Nature has placed them, we can only discover by experimental cultivation. It has already been proved that species which have been found on limestone in Nature will readily flourish in a lime-free soil under cultivation. So lime is not essential to them, although whether it is in any way detrimental is another question. But the dwarf Rhododendrons may be handled so easily and be accommodated in such small beds, that further interesting experiments may be made freely, and growers whose gardens are on limestone may take up their cultivation with a reasonable expectation of a greater measure of success than they have attained with those species which definitely abominate lime in any form. *F. C. Puddle, Bodnant Gardens, Taly-cafn, North Wales.*

TREES AND SHRUBS.

CORNUS FLORIDA.

This deciduous shrub or small tree attains a height of from ten to twenty feet when cultivated in this country, although in its native habitat it is said to grow considerably higher.

It belongs to those species of Cornus which are valued from a decorative point of view on account of the attractiveness of their bracts, the actual flowers being insignificant.

The foliage is dark green in colour and often during autumn takes on rich shades of red and orange. The flowers are produced in small, insignificant clusters, but they form a centre for the four large, inverted heart-shaped bracts which are curled and waved and are creamy-white in colour, and which, when produced freely during May, impart to the plant a very attractive appearance.

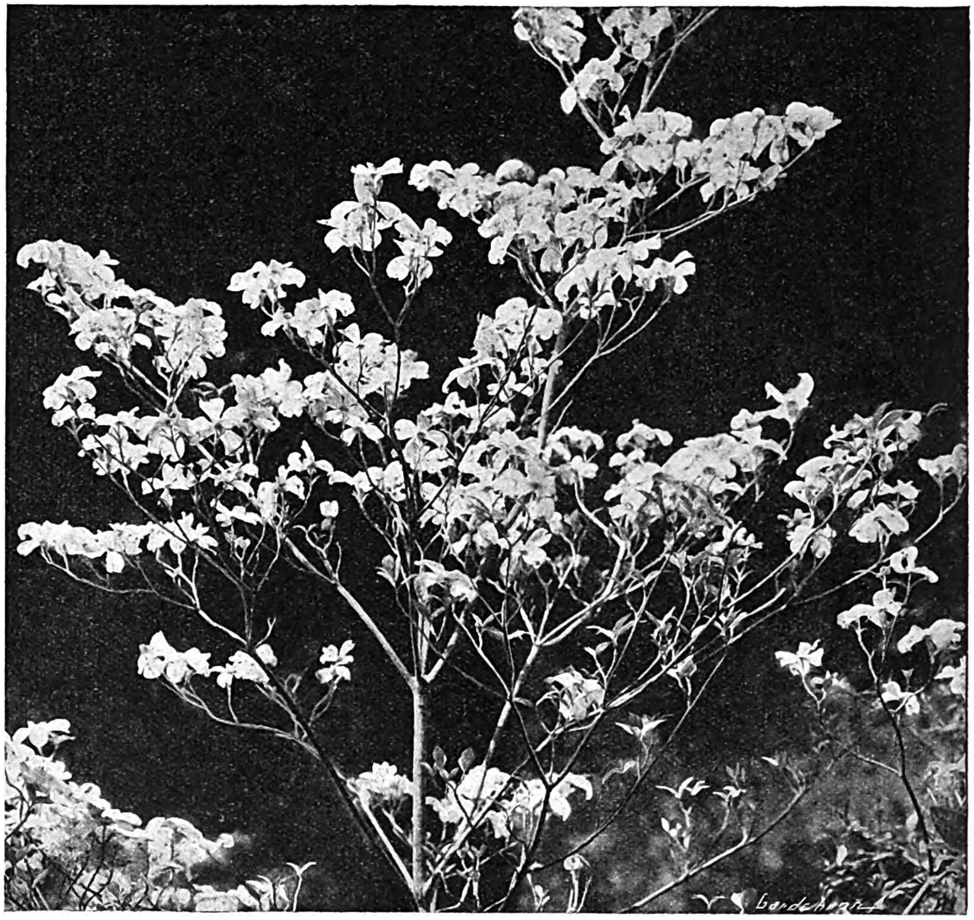

FIG. 88.—CORNUS FLORIDA.

Cornus florida (Fig. 88) is a native of the eastern United States, and was introduced to this country in 1730, but it has never been grown extensively. It is quite hardy, but it is advisable to plant it in a slightly sheltered position, as it is liable to injury from spring frosts.

There are one or two distinct forms of this Cornus in cultivation, the finest being C. florida var. rubra, which, by many, is considered to be far superior to the type, for its bracts are bright rosy-red, while it is supposed also to be more vigorous.

C. florida var. pendula is another distinct form, with stiff, pendulous branches.

DRIMYS WINTERI.

This handsome evergreen shrub, known as Winter's Bark, was introduced as a living plant from South America in 1827, but some of its aromatic bark was brought home by Captain Winter so long ago as 1578.

In the south and south-west of England it grows to a height of from fifteen to thirty feet, but in its natural state it is known to exceed forty feet. The young shoots, which are smooth and slightly tinged with red, are covered with pale green, glaucous, lanceolate leaves that are from six inches to ten inches long, and are very aromatic when crushed. The flowers are borne on the growths of the previous year, in clusters of loose umbels that are from six inches to eight inches across. These blooms are creamy-white, fragrant, and about one-and-a-quarter inch in diameter.

Drimys Winteri thrives in a warm, loamy soil, and may be propagated by cuttings or layers. *F. S. Banfield.*

ROSE GARDEN.

ROSA MULTIBRACTEATA.

This pretty Rose species was discovered by Mr. E. H. Wilson during his Veitchian expedition of 1904, but the exact locality of the discovery was not recorded. In 1908, and again in 1910, Mr. Wilson found the same species, and he states, in *Plantae Wilsonianae*, that it is common in the valley of the Min River from Wen-chuan Hsein to Sungpou Ting, in western Szechuan, at 1,600 m. to 3,000 m. altitude. The flowers are pink, and when borne in paniculate corymbs, with crowded bracts, they are very pretty, but Mr. Wilson states that there are depauperate forms in which the inflorescence is reduced to a single flower. The whole plant grows from 1 m. to 2 m. tall, and is clothed with elegant foliage in which the leaflets are orbicular. For its foliage alone R. multibracteata is worthy of the attention of hybridists, but those who attempt its use as a parent should take care to use a free-flowering and not a depauperate form. The illustration on p. 169 (Fig. 86) represents a small spray from a plant in the Kew collection. The flowers of R. multibracteata are followed by orange-red fruits. The species was originally named and described in the *Kew Bulletin*, 1906, by Hemsley and Wilson.

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THE RÔLE OF MYCORRHIZA IN PLANT GROWTH.

WHETHER by reason of a somewhat forbidding name, or because of the unsatisfactory treatment it has received in botanical text-books, the subject of mycorrhiza has been all but ignored in the literature of soil science—the latest edition of a standard work on soil conditions dismisses it in half-a-dozen lines! Affecting an immense number of plant species belonging to many different families and occurring regularly under the most varied conditions of soil and climate, the mycorrhizal habit assuredly challenges attention as a biological factor of great theoretical interest, and, it can hardly be doubted, of potential importance to practical growers.

Mycorrhizae, or "fungus roots," are found alike in wild and cultivated plants, in the vegetation of tropical forest and in that within the Arctic circle, in species from the high alps and in those from the salt marsh by the seashore.

The history of the subject goes back nearly one hundred years. During the first half of the nineteenth century more than one naturalist noted curious appearances in and upon the roots of vascular plants, and by 1842 certain inclusions in the root-cells of Iris had been identified as fungus growths. Indeed, the phenomenon was comparatively well-known, especially to foresters when, in 1885, Professor Frank, of Breslau, coined the new name Mycorrhiza, or fungus-root, to describe the dual structure formed by a root with its associated fungus mycelium.

Frank's interest in the subject had been stimulated by an enquiry undertaken at the request of the German Government to investigate the exact relation of Truffles to the roots of trees with which these fungi were regularly associated. During the twenty years following his classical researches, the subject attracted many workers, especially in Germany, and its physiological significance provoked some controversy. In certain plant groups, for example, Orchids and Heaths, the relations of fungus to vascular plants were recognised as specialised, and it was observed that the mycelium in the root-cells of Orchids suffered digestion, so giving rise to soluble products thus placed, presumably, at the disposal of the host. To botanists, these facts were novel and striking, and, although little experimental work was then available, they served as a basis for various theories of nutrition. On one view, associated especially with the name of the famous German forester and mycologist, Robert Hartig, the root fungi of trees were mischievous parasites hindering root action and conferring no benefit of any kind upon the hosts. On another, the relation was one of mutual tolerance involving reciprocal benefit with particular advantage to the vascular partner.

These older theories of beneficial symbiosis are especially associated with the names of the botanists Frank and Stahl. Both held that the hyphae investing the roots played an important part in the intake of water and salts. Frank stressed the importance of the soil humus as a source of carbon and nitrogen, and he included the formation and utilisation of suitable compounds of these elements among the services rendered to their hosts by their root-fungi. Stahl believed that the mycelium played an important part in maintaining the requisite supplies of mineral salts. He held that the incidence of fungus infection of roots was directly related to the difficulty of procuring inorganic salts, and described all mycorrhiza plants as *mycotrophic* (fungus-feeding), in nutrition. These theories were deduced almost entirely from the distribution and structure of mycorrhiza, and were but inadequately tested by experiment.

What may be called the modern period of research began early in the present century. It has been marked by recognition of the extraordinary frequency of the phenomenon in nature, and by the application of new and more precise methods of experimental research. With this has come realisation that the physiology of the relation presents problems closely akin to those of parasitism and pathogenic infection in general, and the conviction that it is only by the use of "pure culture" methods that any substantial increase of knowledge can be gained.

Investigations of the kind indicated are apt to be extremely laborious! The isolation of the mycorrhizal fungi, their maintenance in pure culture outside the host, and the re-association of vascular plant and fungus under controlled conditions, all make heavy demands on knowledge, skill, and a specialised technique, while evidence of behaviour under experiment must be applied with great caution to conditions in nature. For these and similar reasons, the bionomics of mycorrhiza and the nutrition of plants that show regular fungus infection of the roots are still the subjects of controversy, although enough is known to correlate them with kindred phenomena of parasitism and bring them into close touch with problems familiar to the forester and student of plant ecology in the field.

In the present series of articles it is proposed to review briefly such experimental evidence as is now available bearing on the nutritive relations in mycorrhiza; to consider how far this lends support to the older, more or less speculative theories, and to learn to what extent it is capable of practical application.

The roots of all plants growing in soil are liable to invasion by any fungal hyphae which can effectively penetrate them. Soil, especially that rich in humus, has an abundant and varied fungus flora, not a few members of which are parasites, or potential parasites, capable of attacking and destroying vegetable tissue. Some of them do so attack the roots of vascular plants, producing disease and, incidentally often causing serious loss to growers. It is evident, however, that the presence of parasitic fungi in soil does not in itself lead inevitably to disease due to infection. In the long run this is determined by a number of complicated factors, *e.g.*, the presence of a suitable parasite; the resistance of particular plants or groups of plants to parasitic invasion—whether by effective exclusion of the parasite or by its destruction after entry into the tissues; the existence of conditions favourable or unfavourable to parasite and host respectively; and possibly also, the presence of relatively benign or virulent strains of the attacking fungus or other organism.

There can be little doubt that the mycorrhizal habit had its origin in parasitic attack on the part of certain soil fungi. It seems likely that the evolution of the habit has been prolonged and devious, and it may well be that existing mycorrhiza plants are the successful survivors of a long and perilous evolutionary history! Moreover, the battle is still in progress, and it would be rash to assume that a condition of stability always exists between fungus and host, or that knowledge gained from a study of some one species is of general application.

In this connection, the writer desires to put forward a plea for a revised usage of the hard-worked term "symbiosis." As originally used and defined by de Bary in 1879: "The living together of dissimilar organisms"—it covered a vast field, the cases included in which obviously require further classification in respect to the mutual relations of the animals and plants concerned. In this older sense, every mycorrhiza plant is a case of symbiosis.

As now used, however, the term has come to mean more than this, and implies partnership with mutual benefit to the participants, and it is frequently used in this sense to describe cases for which no experimental data are available, *e.g.*, to mycorrhiza plants in general. Recognition of the exact nature of the relationship in any given case depends upon the accumulation of experimental evidence and, failing this, must remain to some extent a matter of opinion.

However probable that the habit of forming mycorrhiza originated in parasitic invasion by soil fungi—the effect upon the root is now strikingly different from that seen in ordinary parasitism. In general, it is the young and actively absorbing roots which become mycorrhizas, and they show no indication that the tissues suffer any permanent injury from the more or less extensive invasion to which they are subject.

In some plants all the younger roots are affected, in others infection is more localised. Sometimes the external appearance is affected, as in trees, where arrest of growth is accompanied by profuse branching, resulting in the production of dense clusters of rootlets often coloured in various ways. Sometimes the appearance of the root is not altered in any way. There is great variation, likewise, in respect to the details of structure in different plants and often at different seasons; the relative abundance of mycelium, and its distribution upon and within the roots. It is still convenient to recognise two main types of structure, and to use the descriptive names given them by Frank. The *ectotrophic* type, specially characteristic of woody plants, in which mycelium invests the tip and younger portion of the root as with a sheath of varying thickness while the inner tissues remain relatively immune from infection; and the *endotrophic* type, showing a variable degree of external infection without the formation of a sheath, combined with a more or less profuse internal distribution of hyphae with frequent penetration of individual cells of the root. These two kinds of mycorrhiza are probably not so sharply distinguished as was formerly believed. It is known now that mycorrhiza of the ectotrophic type often shows relatively heavy infection of individual root-cells, and it seems likely that the structural differences may be related to the character of the fungi present and to soil conditions rather than to any fundamental distinction in the nature of the association as a whole.

M. C. Rayner.

(*To be continued*).

IDEAL GARDENS AND PLANT LORE.

THE PARADISE OF INDRA.

(*Continued from page* 82.)

IN addition to the five sacred plants to be found in the Garden of Indra there are many others which bear the name of this once famous Hindu God. Since they are in most instances well-known species, with much of romance and interest in their history, we must find a place for them in our ideal garden. Some are signalised by their beauty. Others have medicinal properties, supply delicious fruits, yield seeds for various purposes, and in other ways appeal alike to the utilitarian and the dreamer.

We begin with the one which is, perhaps, the first in interest and importance, and bears the name Indradaru, or Indradru (Terminalia Arjuna), the termination of which reminds us of the Dryads or nymphs of the woods. The scientific name Terminalia recalls the fact that the leaves in the species upon which the genus was founded were collected in clusters at the ends or termini of the branches. The fruit of the Arjuna has five wings. The tree attains to a considerable size, with smooth bark and oval leaves which are often cordate. Spikes of violet or light purple flowers, usually in panicles, adorn it, and are exceedingly lovely. One writer states (in *Asiatic Researches*, Vol. IV, 1807, p. 293): "I have seen a single panicle waving near the summit of the tree, covered with blossoms, and as large as a milkmaid's garland," whatever that may mean. The tree is common in the jungles in many parts of India, and is only one of several species. An allied form produces Nuts, which make an excellent ink when treated with sulphate of iron. Usually the plants have astringent properties, and one species (T. Benzoin) yields a milky juice which when dried, is used for making incense, while another (T. Vernix) abounds in a resinous product which is used in China and the Moluccas as a varnish. The fruit of another species (T. Catappa) is edible, and the tree affords a pigment from which Indian Pink is made, and with which the people dye their cloth. Leather is tanned from the fruits and galls, which abound on other species, and which are of a very astringent nature. The name Arjuna is employed in the well-known Ramayana in relation to this sacred tree of Indra, and is apparently related to the Latin argentium. Arjun and Arjun Sadara are among the various names still used in India when speaking of this tree.

The name Indradru is also applied to another tree (Wrightia antidysenterica), further known in Sanskrit as Vrikshaka. The seeds of Wrightia are known to-day as Goda inderjas, or Indra's Barley, from the Sanskrit name Indrayava. Another name for them is Upavaka, perhaps, as Prof. de Gubernati's states, for Upavakya or "Worthy of Praise," because of their valuable properties.

Next we come to (Methonica) Gloriosa superba, which is pre-eminently the flower of Indra, or Indrapushpa. *Pushpa* is the regular and best-known term in Sanskrit for a flower, and is inseparably linked with the old Hindu plant-lore. Thus Vishapushpa is the blue Lotus, and Vijapushpa is one of the names of the Citron, and of a small handsome tree (Vangueria spinosa), which has an edible fruit recalling that of the Medlar, when ripe, by its brown, rotten pulp. The term Methonica is sometimes written Mendoni, and was applied to certain forms of Coronaria by Rheed (or Van Rheede). Owing to changes in nomenclature, one finds it a little difficult to decide exactly what plant was dedicated to Indra under this name. It might be a Tulip, Narcissus, or possibly an Asphodel, any of which would be an ornament to our garden.

In the case of a third plant, Indra and Varuna share the honours between them. This is a plant of great interest, being known in Sanskrit as Indra-varunika, or that which belongs to Indra and Varuna (Citrullus Colocynthis), a kind of Melon or Pumpkin which has a remarkable history. The modern native names Indrafal and Indrayan retain the old associations with the god of fertility. It is a large, rough creeper with deeply-gashed leaves and round fruit the size of an Orange, smooth, yellow and variegated with green. While apparently wild in many parts of India, it is cultivated all over the country, to which, however, it is by no means limited. In the deserts it is a characteristic plant, extending from Arabia to Palestine across the whole of North Africa. It is either one with or closely related to the Wild Vine of the Old Testament (2 *Kings*, 4, 39), and may be one of the plants known as Melons in Scripture (*Numbers*, 11, 5). The juice is cool and refreshing. It has been stated by some writers that the seeds are distributed by jackals, presumably after biting the fruit, but Dr. Buxton thinks this is not a common occurrence, since rodents and jackals seem to eschew it on account of its bitter and purgative properties. There are, however, so many closely related species that it is very easy for observations relating to one to be set down to the credit of another. What is certain is that a Gourd, Melon, Pumpkin or Citrullus of some kind has a right to a place in our Garden.

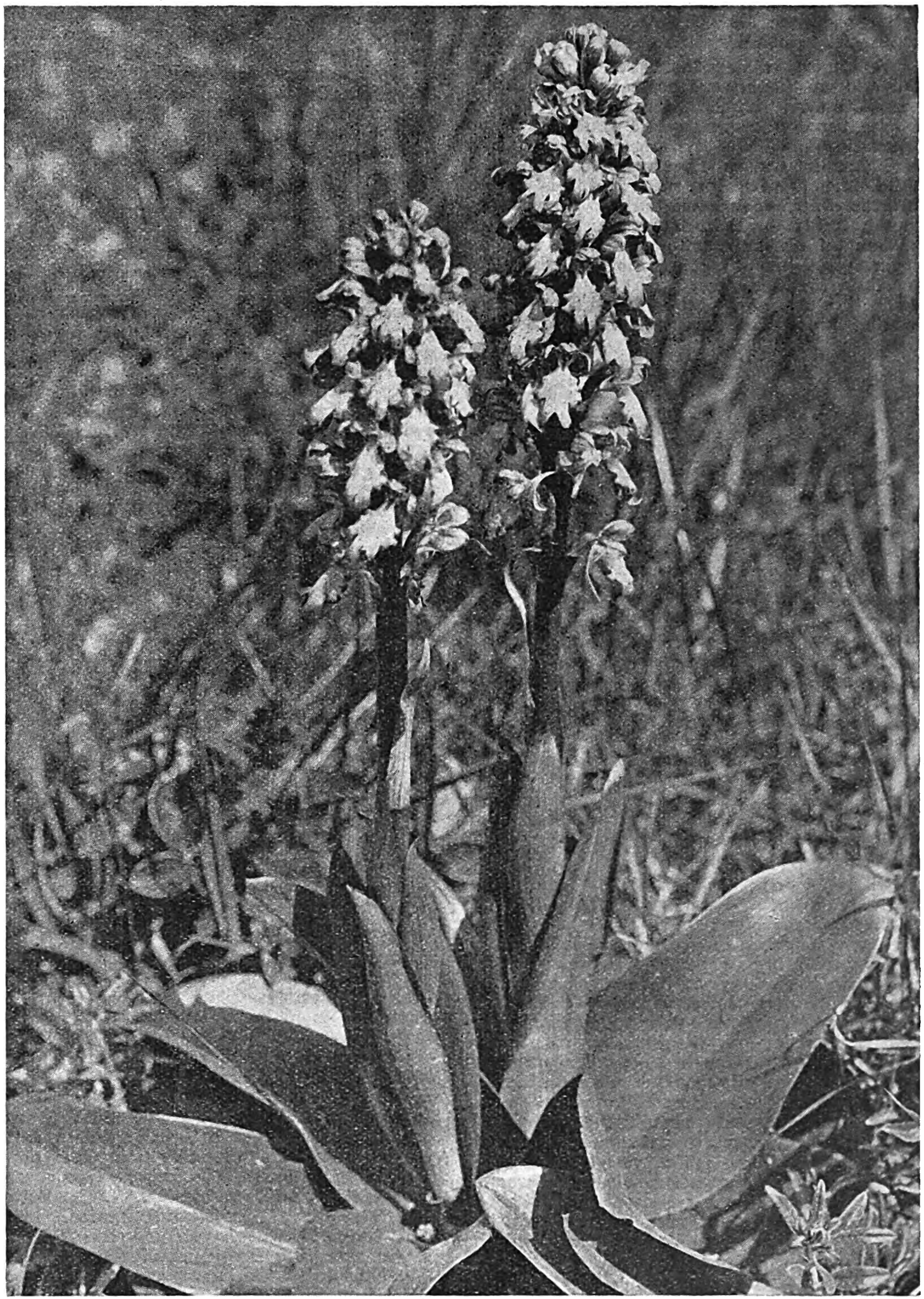

FIG. 89.—ORCHIS LONGIBRACTEATA.
(see p. 170).

Next in order comes the Indrani (Vitex Negundo), a tall shrub with grey foliage, small, lilac or light blue flowers arranged in panicles, and black berries the size of a Pea. It is found throughout India, and is, perhaps, the commonest shrub in Konkan. The leaves, when crushed, have a very strong and unpleasant smell, which seems to affect insects. It is variously named Indranika, Indrasura and Indrasurasa or Surisa, and is highly prized and praised for its beauty. "This charming shrub (states one authority), which seems to delight in watery places, rises to the height of ten or twelve, and sometimes of twenty feet; exhibiting a most elegant appearance, with rich racemes or panicles lightly dispersed on the summit of its branches." Leaves of this or a closely related species are found to be very aromatic, and pillows are stuffed with them, to remove a cold in the head, or the head-ache which the cold may occasion. The Vitex belongs to the Order Verbenaceae, which gives us the Aloysia, commonly cultivated under the name of Sweet Verbena on account of its fragrance.

We have now to add the Indracana (Abrus precatorius), a plant which is well-known on account of the pretty seeds being employed by goldsmiths as weights, each seed being said to exactly correspond in weight with a grain. It is a small, twining plant with a woody stem with numerous oblong leaflets, pale flowers in crowded racemes, and flat-beaked pods containing round, scarlet seeds with a black spot. These seeds are well-known in Europe on account of their use in making rosaries or prayer beads, and it is to this fact that the plant is indebted for its trivial or specific name precatorius. In Egypt the seeds are often eaten like pulse. They are, however, hard and indigestible and some regard them as deleterious and quite unsuitable for human food. They are named Krishnala in Sanskrit, after the god Krishna, the most celebrated incarnation of Vishnu, and thus have more than one sacred association. Seeds of one kind of Coral tree, another of the plants already introduced into Indra's Garden, are said by Bruce, the famous traveller, to be called Karat in Abyssinia, whence the word carat, because they were used for weighing gold. Others, however, state that the fruit of the Locust Tree is intended.

Nor must we omit from our list of plants the Hemp (Cannabis), also known as Indracana, *Cana* in Sanskrit is the name for Hemp for which Cannabis has been derived. It was also used for another plant (Crotalaria juncea) or Bengal San. from which a kind of Hemp is prepared. It was devoted to Indra because of its intoxicating properties, known to us under the name of Hashish, which has given us the word assassin.

We cannot exhaust the list of Indra plants, but add one further name in conclusion of our present study, viz., Trinaindra, or the Tree of Indra, usually known as the Palmyra Palm (Borassus flabellifer), the largest of the family of Palms in India. The fruit, as large as a child's head, with its white pulp, is edible, and the white sap is converted into a spirituous liquor, toddy, or Palm wine, which is greatly in demand. It may, unfermented, be used for sugar. It is the leaves of this tree which are used for writing upon with an iron stylus, while they are also used for thatching houses, making mats, fans and baskets. *Hilderic Friend.*

(*To be concluded.*)

FLOWER AND FRUIT STERILITY.

The papers presented at the International Conference on Flower and Fruit Sterility held in New York in August, 1926, under the auspices of the New York Horticultural Society, have been published as Vol. III of the Memoirs of the Society.*

The volume (which exceeds 400 pages) adds considerably to our knowledge of the problems raised by the occurrence of sterility in plants. Papers dealing with the many problems associated with incompatibility and sterility in fruit trees take up a considerable part of the volume, and include contributions by investigators in Sweden, Japan, Norway, Russia, France and England, as well as in America. In addition to their scientific importance, these contributions are of direct practical value.

Briefly stated, they show that the practical requirements of fruit trees for the setting and development of their fruits are: (1) An efficient standard of cultivation; (2) the interplanting of self-sterile and partially self-sterile varieties with other varieties which flower at the same time, and which are mutually inter-fertile; and (3) a sufficient number of flower-visiting insects to ensure cross-pollenation. It is also clear, although a good deal of actual sterility is involved, that the main problem in our domestic Cherries and Plums is one of incompatibility; and it is evident in these fruits that self-sterility, or, to write more correctly, self-incompatibility, is a varietal character which is as stable as any morphological character. In Apples and Pears our knowledge does not appear to be so clear, and pending a critical cytological study, I doubt whether it will be possible in these fruits to determine whether incompatibility or actual sterility plays the greater part.

To the geneticist the papers of Professor E. M. East and A. J. Mangelsdorf, of the Bussey Institution, on "The genetics and physiology of self-sterility in Nicotiana," by Professor E. Lehmann of Tübingen on "The heredity of self-sterility in Veronica syriaca," and by Dr. M. J. Sirks of Wageningen on "The genotypical problems of cross-incompatibility," are of exceptional interest. These investigators, working on such widely different plants as Nicotiana, Veronica and Verbascum respectively, independently arrived at conclusions which are essentially the same, and have provided a factorial interpretation of the phenomenon of self- and cross-incompatibility which is of real significance. The paper by F. G. Brieger and A. J. Mangelsdorf on "Linkage between morphological characters and factors for self-sterility" is also noteworthy, as in addition to establishing a unique example of linkage in Nicotiana, it corroborates East and Mangelsdorf's interpretation of sterility.

The results obtained by the above investigators in Nicotiana, Veronica and Verbascum show that self- and cross-incompatibility is determined by genetic factors, just as are morphological characters, but the behaviour and inheritance of incompatibility is naturally complex. In self-sterile individuals pollen can only grow and function on a stigma which is of a different genetic nature; like repels like, and self- and cross-pollenations between individuals with the same sterility factors fail, because the growth of the pollen tubes is inhibited and arrested in the stylar tissue. Consequently groups of individuals occur which are sterile *inter se.*

Since I have shown in my own contribution "Studies in relation to sterility in Plums, Cherries and Apples," that many of our domestic Cherries and Plums fall into similar incompatible groups, the pomologist, no less than the geneticist must be deeply concerned in the results of these experiments. Indeed, even at the present time, it appears probable that the underlying principles are applicable to these fruits, although owing to their hexaploid and aneuploid chromosome constitution further complications are rather to be expected. It may be emphasised that incompatibility is only the result of likeness of sterility factors; morphologically the plants may be quite different, *e.g.*, the Cherries Bigarreau de Schrecken, Bigarreau Frogmore, Belle Agathe and Waterloo, are all in the same incompatible group, although they differ widely in fruit colour and many other respects.

Other important genetical and cytological contributions, which contain much that is of horticultural interest, are those on "Inherited pollen-sterility in Shepherd's Purse," by Professor G. H. Shull; "Pollen-tube behaviour with reference to sterility in Datura," by Drs. J. T. Buckholz and A. F. Blakeslee; "The course of pollen formation in certain Roses, with some deductions therefrom," by Drs. J. W. H. Harrison and K. B. Blackburn; "Relationships of polyploidy to pollen sterility in the genera Rubus and Fragaria," by Dr. A. E. Longley; and "Types of sterility in plants and their significance in horticulture," by Dr. A. B. Stout.

Various aspects of sterility in Roses, Dahlias, Paeonias, Carnations, Beets, Potatos and many other economic and ornamental plants, which take a prominent place in horticulture, are reported upon by well-known breeders and investigators. The paper by Dr. W. Crocker, of the Boyce Thompson Institute for plant research, on "Dormancy in Hybrid Seeds," is of direct practical value, and the paper by Professor F. E. Lloyd, of the McGill University, on "Abscission in general, with special reference to the curtailment of fruitage in Gossypium," is of wide interest. The volume also contains the opening address by Dr. N. L. Britton, Director of the New York Botanical Garden, and the address of welcome by Mr. T. A. Havemeyer, the President of the New York Horticultural Society.

It is obviously impossible in a limited space to review adequately a volume which contains over fifty authoritative contributions on such an involved subject as sterility in plants, and only a brief outline of its contents is given in this report. The New York Horticultural Society has reason to congratulate itself on the success of the Conference. The completion of this work brings us appreciably nearer to an understanding of the widespread phenomenon of sterility. The whole publication reflects great credit on the Editor, Dr. A. B. Stout, and to the botanist, the geneticist, the pomologist and the horticulturist alike the volume cannot fail to be of real interest and value. *M. B. Crane, The John Innes Horticultural Institution.*

THE GENUS PRIMULA.

It is proposed in the following account of the genus Primula to give brief, simple non-technical descriptions of all the known species, etc., using as few scientific terms as possible, and only giving information likely to be of use to lovers of these beautiful flowers, to enable them to form some idea of, and perhaps successfully cultivate, any they may acquire. The nomenclature is that of the *Index Kewensis*, so far as it goes, but, as it is well known that the various species of Primula are notoriously difficult to separate from their various forms, many plants now accorded specific rank, may, when more closely studied in a state of nature, prove mere forms of some well-known species, or, on the other hand, plants treated as varieties now may be found sufficiently distinct to be raised to the rank of a species.

The various species have been grouped together into somewhat fluid sections, according to their likeness to one another. Authorities disagree as to the limits and constitution of the sections and the rulings of the late Professor Sir Isaac Bayley-Balfour have been adopted so far as possible.

The measurements given of leaves, flower stems and blossoms are mainly those of wild plants, and species under cultivation may be found to vary in this respect, according to whether they are grown in poor or rich soil. Also it is well-known that the blossoms of many species of Primula continue to increase considerably in size for several days after they first expand, and as our knowledge of a species is frequently gained from only two or three specimens, measurements given of the width of the corolla may, in some cases, be less than its actual diameter.

Where the plant is not in cultivation, the time that it flowers in its native country has been inserted, if it has been recorded by the collectors.

Finally, for the benefit of beginners in the culture of these lovely plants, in instances where a species has not yet been introduced, or has been lost, cultural indications are given, based partly on the conditions under which it grows in a state of nature, and partly on the knowledge gained by the successful culture of other closely allied members of the particular section to which it belongs.

In compiling these descriptions, the writer is deeply indebted to many eminent authorities on the genus, for having culled information likely to be of use and interest to gardeners from their writings on the subject, amongst whom may be mentioned: the late Professor Sir Isaac Bayley-Balfour, Professor Wright Smith, Professor W. G. Craib, Messrs. Pax and Knuth Mons. H. Leveille, Mr. G. Forrest, Dr. J. MacWatt, and the late Mr. Reginald Farrer.

A complete list of the natural hybrids will be given at the end of these articles, together with the synonyms, etc.

The name of the species is given, followed by the authority for it; then the common name, if one exists; and the section to which the species belongs; then a brief description, habitat, varieties and cultural notes, so far as these are possible; and references to illustrations.

ACAULIS (Linn. Hill). Common Primrose. (Vernales.)

This, our native Primrose, is too well-known to need any description. It grows on hedge banks and in somewhat open woods, ranging over central Europe from Britain to Russia, but does not extend to north-eastern Europe, the Altai Mountains or Siberia; it is also found on some of the mountain ranges of southern Europe and western Asia, and is considered to be indigenous in America. This plant was formerly united with P. officinalis (the Cowslip) by Linnaeus, but is now considered by most botanists to be a distinct species. There are several forms:—var. balearica (Willkm.), foliage nearly smooth beneath, flowers white; var. heterochroma (Stapf.), a very hairy form from northern Persia; var. rubra (Sib. and Sm.), greatly resembles the type, the chief difference being in the tinting of its flowers, which vary from red to reddish-purple. It blossoms all the winter in cultivation, and is found in thin woods ranging from the Levant to the Caucasus and northern Persia. The red and purple Primroses, both single and double, of our gardens, are considered by many to have sprung from this variety. It is an old inhabitant of gardens in this country but does not appear to be common as it is not so hardy as the common Primrose.

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* *Memoirs of the Horticultural Society of New York, Vol. 3.* Edited by A. B. Stout. Pp. xi + 408 + 30 plates. Published by the New York Horticultural Society, New York. 1927.

ADENANTHA (Balf. f.) Glandular-flowered P.
(Muscaroides.)

This species forms a small rosette of thin, papery, narrowly oval, blunt leaves about two-and-a-half inches long, including the narrowly winged, densely hairy stalk; their irregularly toothed margins are fringed with minute hairs; both surfaces are more or less minutely hairy. The erect, downy flower stem is about eight inches long and terminates in a compact, rounded head of funnel-shaped, blue blossoms, each about half-an-inch long and a quarter-of-an-inch across. The corolla is divided into five rounded, slightly notched, overlapping lobes, and is covered with minute glandular hairs externally. Flowers in July. This attenuated species is found near Singshi Timpu in Bhutan, in the eastern Himalaya, and was discovered in 1914.

Culture: Good loam, leaf-soil and grit, in a moist, but well-drained spot, in half-shade; protection from frost by a handlight is indicated.

AEMULA (Balf. f.). Rival P.
(Maximowiczi).

A robust perennial species with a large rosette of narrowly obovate or oblong, minutely-toothed, quite smooth leaves, a foot or more long and two-and-a-half inches wide, tapering gradually towards the base into a narrowly-winged stalk. Flower stems stout and fleshy, about two-and-a-half feet tall, bearing from four to five superposed, many-flowered umbels of bright yellow blossoms with a golden eye; the exterior of the blossoms glisten with a satiny sheen. The corolla is about one inch across and is divided into five flat, thick, narrowly oval lobes with a small tooth at the tip; tube funnel-shaped, five-eighths inch long. Flowers in July. This species grows in open alpine pastures on the mountains of the Chungtien Plateau in north-western Yunnan, at 11,000 feet above sea-level.

Culture: Good fibrous loam, in a sunny, fairly moist, but well-drained spot, is indicated.

AEQUALIS (Craib). Equal P.
(Denticulate).

The foliage of this plant is not fully developed when the blossoms are in perfection. The leaves when fully developed, are oblong or broadly lance-shaped, four to five inches long, rounded and thickened at the tip, tapering to a winged stalk, and frequently dilated at the base; the margin is furnished with regular sharp, saw-like teeth; the surface is covered with minute hairs. Flower stem stout, four to five inches tall, lengthening when in seed, very slightly mealy upwards. Blossoms probably purple, in a compact head. Corolla equalling the calyx in length, with a tube three-eighths-of-an-inch long, and broadly heart-shaped lobes about half-an-inch across.

Grows in moist alpine meadows at Phallut and Singallelah in the Sikkim Himalaya at 11,000 to 12,000 feet above sea-level.

Culture: Rich, fibrous loam and peat in a moist spot in half shade; keep comparatively dry in winter and mulch in spring.

AEQUIPILA (Craib). Equally hairy P.
(Petiolaris.)

This perennial species possesses a somewhat stout root-stock, clothed towards the apex with rather large, brown, toothed scales. The sub-erect leaves have oblong-elliptic blades about four inches long and three inches wide, rounded or truncate at the tip; margins slightly scolloped, wavy, with sharp, somewhat recurved teeth; surfaces sparsely downy above and with longer hairs evenly distributed below; their densely hairy stalks are about two inches long Flower stem short but well-developed; stalks three to six inches long, sparsely hairy, each bearing a purple flower about one-and-a-quarter inch across, with broad, shallowly notched segments, retuse at the tip with a sharp point in the notch; tube cylindrical, half-an-inch long.

This variable species has Primrose-like flowers and is found in marshy soil near Changyang in Hupeh, central China, at 5,600 feet above sea-level. It was introduced early in this century but was soon lost.

Culture: Plant in good fibrous loam and peat, and treat as a bog plant.

(*Gard. Chron.* Sup. Illus., p. 62, 1905, under P. ovalifolia.) *A. W. Darnell.*

(*To be continued.*)

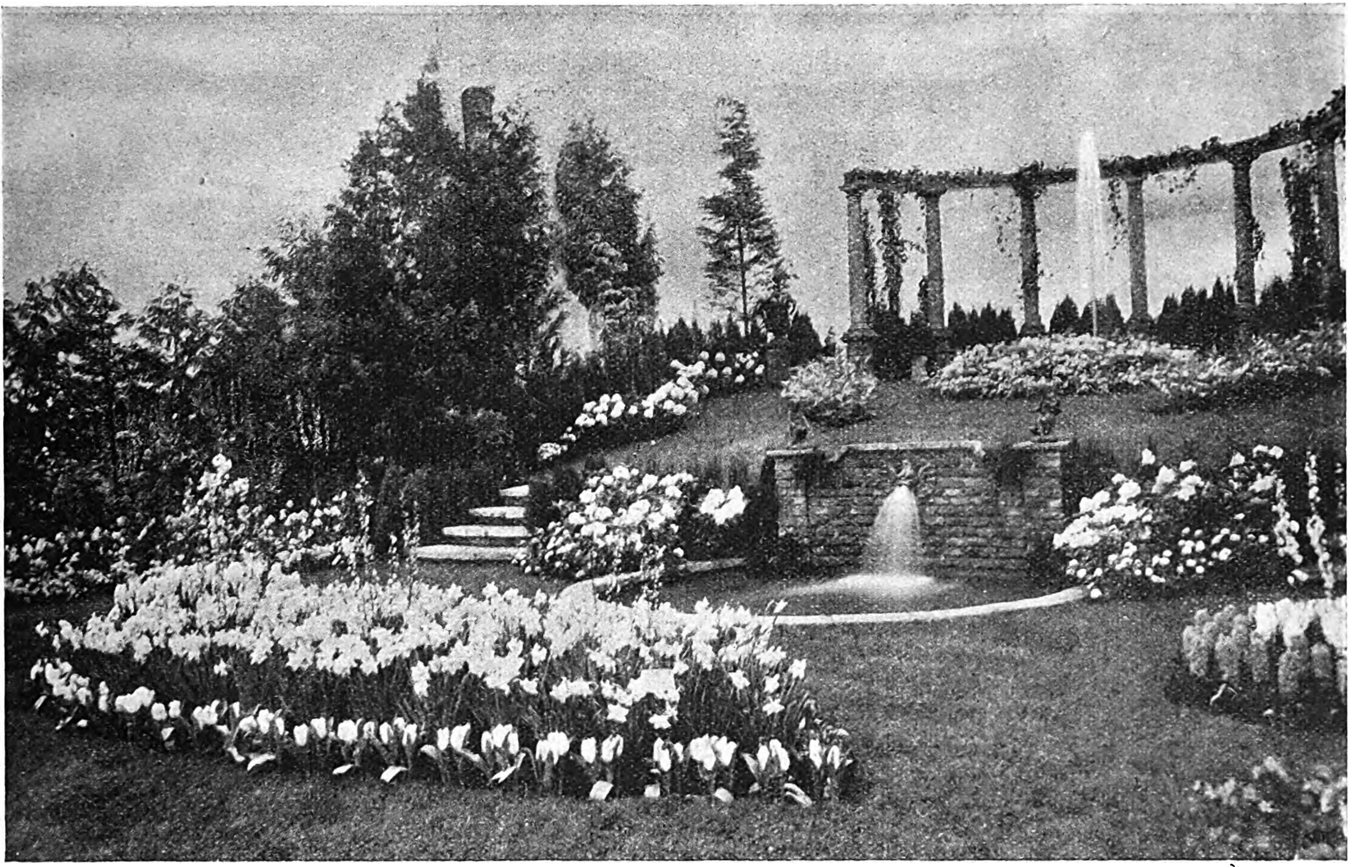


FIG. 90.—MESSRS. J. CARTER AND CO.'S GARDEN AT OLYMPIA.

THE GARDENS AT OLYMPIA.

It has become a recognised thing for the annexe at Olympia, during the *Daily Mail* Ideal Home Exhibition, to be set aside for gardens made and maintained by various seedsmen and nurserymen. The popularity of this feature of the exhibition continues unabated, and large numbers of the visitors willingly pay the extra charge for the privilege of inspecting the gardens. This year the *Daily Mail,* for some reason not readily apparent, advertises them as "The Gardens of the Poets." Each garden has been given a poetic quotation and there, so far as we could discern, the association with the poets ceased. We imagine that, like ourselves, few of the many garden lovers who go to Olympia between now and March 24 will concern themselves over much with the poetic fancies, but be content to give their attention to the gardens, and no matter what their general designation may be, only the ultra-critical would question the charm and beauty of the majority.

The general idea of the gardens at Olympia is to indicate various methods of treating garden grounds of modest dimensions, and as there are over a score of gardens, considerable variety is displayed. This year a distinct improvement has been effected at the entrance and, as first impressions have a great influence, this has added to the general effect. But, as these are presumably intended to be examples of complete gardens, the first impression still fails to suggest the brightness and beauty of the gardens that lie within. On either side of the entrance a sombre note is struck, and the general suggestion is that of grey stone and sparsely-planted greensward. These may be justified by their restfulness, though the knowledgable visitor must be stirred by the sight of sub-tropical and tropical Succulents set in moist ground around a pond which evidently drains the land around.

But a further inspection shows the bright hillside garden designed and constructed with their accustomed skill by Messrs. James Carter and Co. (Fig. 90). The scenery and lighting in the background suggest a sunny bay, while tall trees enclose a sheltered nook wherein this most attractive garden is made. On the little hill-top there is a pleasant colonnade, in weathered stone, overlooking the sea and the valley. In the middle distance there is a well-designed fountain which feeds a pool below. Flanking the fountain, there are ample borders of showy Rhododendrons, Azaleas, Pyruses and other spring-flowering shrubs, while in the foreground there are well-filled beds of King Alfred Daffodils, several good varieties of Narcissus Poetaz, Tulips and Crocuses.

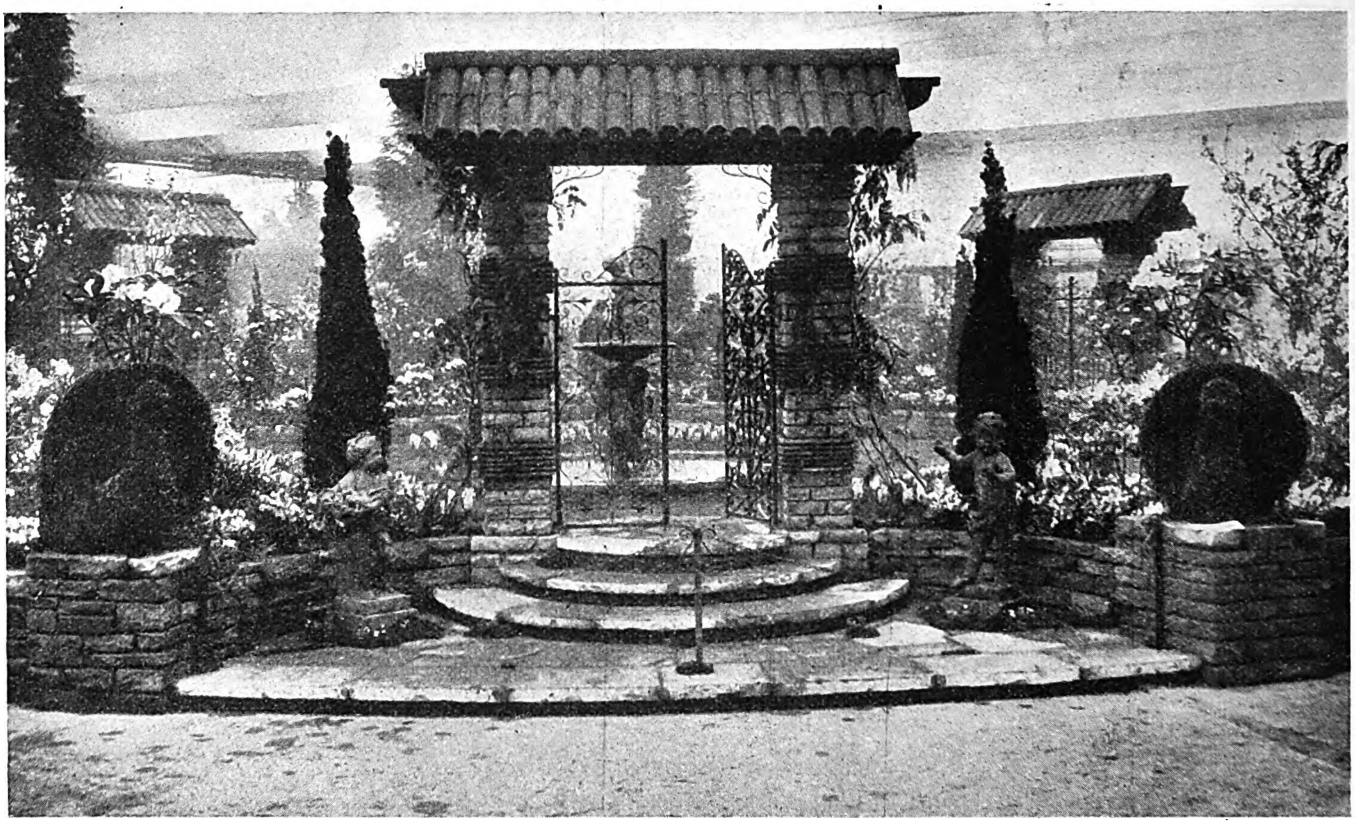


FIG. 91.—MESSRS. A. LUFF AND SONS' GARDEN AT OLYMPIA.

Of entirely different character, yet none the less attractive, is the uncommon Aviary Garden of the Central Garden Supplies Co. In a circular aviary yellow and green budgerigars and perky Java sparrows chirped and fluttered. The aviary is centred in York stone paving, surrounded by raised borders freely planted with Japanese Maples, Rhododendrons, Azaleas, Magnolias and Pyruses rising above spring bulbs and other flowers. The outside is treated so as to provide fitting places for a great variety of alpines and other plants which will thrive under ordinary garden conditions.

One of the most successful gardens at Olympia is the formal circular garden (Fig. 91) of Messrs. A. Luff and Sons and Thompsons, Ltd. The three handsome gates of Venetian type give access to the paved centre, with its pleasant fountain and beds of Hyacinths, surrounded by tasteful, raised borders. The pink and dark-blue Hyacinths are bizarre but exceedingly effective, and the colour tones are carried on to the borders where are well-flowered bushes of various spring-flowering shrubs and border flowers. Altogether it is a garden of arresting beauty. In another part of the building the same firm has an informal garden of simple but satisfying type. A curved path leads to a rustic summerhouse which commands views of shrubbery plantings and green vistas.

The principal feature in the garden of Messrs. J. Cheal and Sons is the substantial pergola of good design, carried out in stone pillars and massive cross-beams, and planted with Roses and other climbing plants. From the spacious pergola are seen formal Rose beds, planted with half-standard and dwarf Polyantha varieties and borders gay with forced shrubs and spring flowers. The double-flowered Cherries and specimens of Rhododendron Pink Pearl are excellent.

A spacious, paved garden in front of terrace walls and flanked by bright groupings of spring shrubs, is well executed by Mr. G. G. Whitelegg, who has planted floriferous Azaleas, Pyruses, Wistarias and Lilacs, and bordered the shrubberies with Azalea Hinomanyo. The garden of Messrs. L. R. Russell, Ltd., is laid out in the form of an arc, with a rustic garden shelter. In a grassy centre they have set bushy Wistarias and Dicentra spectabilis. The borders are well-arranged and contain many good bushes of double-flowered Peaches, Pyruses, Laburnums, Magnolias and Clematis. Messrs. Bakers, Ltd., have a grassy hollow, small, round pool, fed by water gently trickling over cobble stones. On higher ground, around the pool, there are various shrubs, Daffodils and Primroses.

This year, Messrs. R. Wallace and Co., Ltd., have made a "Garden of Rest" with an Oak garden shelter. There is a small lawn with grassy mounds bordering it and planted with forced shrubs and spring bulbs. Messrs. Skelton and Kirby have a rock garden designed on free lines, and with a small pool. Amongst the appropriate shrubs are several groups of Gaultheria procumbens bearing numbers of brightly-coloured fruits. The Country Service Association, Ltd., occupy a considerable area and in their formal garden accommodate several beds of brightly-coloured Anemones of the Drayton strain grown by Messrs. Reamsbottom and Co., who are also showing a good pink variety of the St. Brigid Anemone.

A stone-capped slope with a rivulet and grassy spaces planted with Heathers and Ferns by the Orpington Nursery Co., gives a pleasant and restful effect.

Amongst the special flower gardens is the Carnation garden of Messrs. Allwood Bros., who have filled considerable beds with perpetual-flowering varieties, and have smaller beds of Dianthus Allwoodii. Mr. Baldwin Pinney has a Violet garden, and Mr. John Klinkert has exercised considerable skill in making a Dutch Topiary garden with a large number of well-grown specimens. There are also the Gnome Gardens of Mr. Burton Holt.

These are gardens of to-day and, having enjoyed them, the visitor may contemplate the *Daily Mail's* "Garden of the Future." We believe the year is A.D. 2,000, but to us this garden of the future seems to have slipped many cogs in the wheels of time. Yet, who knows? They of the future may live in such houses as that at Olympia and may find satisfaction in such a garden, with its prison-like walls, with narrow bays of trimmed evergreens, its paltry canal, lighted up at will, flanked by rectangular beds of Hyacinths of nondescript colour mixture. Of the house and the wierdly-attired persons who peopled the garden we say nothing, but we liked the lawn, and felt relief in the well-designed and substantially-built conservatory and garden frames exhibited by Messrs. Wm. Duncan, Tucker and Sons.

THE VALUE OF SULPHUR.

Sulphur, one of the fourteen elements known to be essential to plant life, is of very great importance and scientific interest, and probably few chemicals render such service to cultivators. It acts as a carrier in many of our so-called artificial manures, and by chemical means modifies the composition of soils, rendering certain substances assimilable. It is also said to help bacteria in their work of preparing food for the plant, while its fungicidal and insecticidal properties are well known.

It is asserted that if one incorporates fine sulphur, at the rate of 100 lbs. per acre, with the soil, productivity is definitely increased. How does sulphur act under these conditions?

If one applies it to a sterilised soil its action is insignificant, whereas in a non-sterilised soil its action is very marked.

One can deduce from this that its action has a beneficial influence on the bacteria in the soil. It appears to augment the quantity of nitrogen assimilable, by the activity which it communicates to ammonia-making bacteria and nitrifying ferments. It is well-known that this action can only manifest itself in soils charged with humus, the carbohydrates of which are so necessary for the normal development of bacteria. On the other hand, by means of bacterialisation, sulphur may oxidise itself in the soil and become sulphuric acid. Under the influence of certain anaerobic microbes it would appear that sulphuric acid can be transformed into hydric sulphuric acid, and this may be the cause of the beneficial action of sulphur on vegetation.

It acts then as a partial steriliser of the soil defending the useful bacteria from their natural enemies the protozoa.

Sulphuric acid acts differently, according to the soil in which it is found. If the soil is calcareous, in combining with calcium it augments the proportion of assimilable potash; but if the soil is very deficient in calcium it forms soluble salts with manganese, potash, iron and magnesium. Sulphuric acid coming from the oxidation of sulphur acts also on the mineral phosphates and renders them soluble in water. If, however, the quantity of sulphur in a non-calcareous soil is too great, the sulphuric acid formed renders the soil acid, to the detriment of vegetation. In the environs of Villescresnes in France large areas of Roses are grown in a soil containing little calcium. The growers use large quantities of sulphur to combat fungous diseases; in some areas the soil had become almost unproductive, and on analysis it was established that it was strongly acid, so that energetic liming had to be resorted to in order to regain fertility.

Sulphuric acid combines with bases to be again broken down in a series of transformations to the reciprocal benefit of the plant and the bacteria which enable it to live. The agents which operate these diverse transformations may be chemical or biological, and it has already been shown that through the influence of various micro-organisms, sulphur is oxidised and becomes sulphuric acid which, combined with bases, produces sulphates.

Sulphates decomposed by the aid of oxygen give off sulphuretted hydrogen, whereas sulphur submitted to the influence of microbes, in the presence of oxygen, becomes oxidised. The processes of oxidation render the presence of carbohydrate useless as a source of energy, whereas in the reduction of sulphates which operate without the absorption of heat, the hydrates of carbon are indispensable to enable the reaction to proceed normally. According to these phenomena of chemistry or biology, studied in masterly fashion by Monsieur Kayser, it is not surprising that sulphur should be called upon to render such great service to cultivation.

Numerous experiments with sulphur have been made during the last few years. A report in *L'Eclaireur Agricole et Horticole* records an increase of one hundred per cent from Potato tubers cut for planting and dusted with sulphur, over those not sulphured. Le Comptoir Parisien has obtained excellent results in its field of experiments at Sartronville by employing sulphur in the cultivation of Peas, Potatos, Spinach, Cabbage, Carrots and Onions. *W. Auton.*

TOMATOS.

Dr. W. F. Bewley of the Experimental and Research Station, Cheshunt, Hertfordshire, gave a very interesting lecture on "The Cultivation of the Tomato" to a large gathering of nurserymen, gardeners and allotment holders, at the East Anglian Institute of Agriculture, on Friday, February 24. Mr. A. U. Kemsley presided.

In his opening remarks, Dr. Bewley stated that the Tomato was a very important crop to market men, and one which required a considerable amount of care. He emphasised the importance of "strain," and urged growers to obtain their seeds from plants reasonably free from mosaic disease, as, in his opinion, "mosaic" was carried in the seeds of the Tomato.

A large number of inferior strains were on the market, and an endeavour was being made to sift these out, and, as a result of their work at Cheshunt, they had been successful in obtaining the E.S.I. pure line strain. Growers should also see that all seed-boxes and soil for seed-sowing purposes were thoroughly sterilised before using. Manure was not required in the soil for seeds, but the right mechanical condition of such soil was important. He advocated the use of baked Cucumber soil and twenty-five per cent of clay as a very suitable medium. With this medium and sterilised boxes, they raised 12,000 seedlings at Cheshunt last year, and only seven were lost through "damping off."

It was also desirable to have a soil temperature of not less than 57°, or even one of 60° at planting out time, and to ensure this, a useful method was to set out the plants in their pots where they were to grow until the soil temperature had risen as a result of applying fire-heat in sufficient time.

No information was at present available to show that lime was a necessity to the Tomato, as a crop of fifty tons to the acre had been secured in an experiment conducted in one glasshouse, the soil of which showed only the merest traces of lime. It was usual, however, to apply two tons of caustic lime per acre for the first year, and in subsequent years a light dressing in order that the soil retained its sweetness.

Of organic manures, stable manure was undoubtedly the best. The usual rate of application was anything between thirty and forty tons per acre. This he considered excessive, as in one experiment undertaken fifteen tons gave actually the same yield as a dressing of ninety tons per acre. The customary base dressing of artificials consisted of ½-cwt. bone-meal, ½-cwt. bone-flour, ½-cwt. sulphate of potash, and ½-cwt. hoof and horn. The Tomato did not require the amount of phosphates that was generally supposed, and phosphatic dressings could be withheld every three years out of four. In sunny weather, top-dressings of a nitrogenous fertiliser could be given to the young plants, but in dull weather it was advisable to apply potash with a view to hardening the tissues.

Blotchy ripening was a trouble attributable to a deficiency of nitrogen and potash in the soil, or it might be traced to the plant's inability to obtain sufficient potash for itself on account of a poor root-system resulting from an excess of water. A dry sub-soil would bring about the same condition. An application of 5 cwts. of sulphate of potash per acre after the first watering, and before the third truss was set, had proved highly beneficial. In a severe case of blotchy ripening, the giving of so much as 10 cwts. of sulphate of potash per acre had brought about a complete recovery. Dried blood at the rate of one ounce per square yard was also a very useful dressing.

Dr. Bewley stressed the importance of green manuring, and mentioned that good results had also been obtained by digging in straw, as this had the effect of speeding up bacterial action and increasing aeration.

When replying to questions, Dr. Bewley said that the occurrence of Cladosporium fulvum, commonly known as "mildew," was closely connected with temperature and humidity. He advised keeping the day temperature down and the night temperature up, by maintaining gentle warmth in the pipes overnight during the summer months. At Cheshunt, special ventilators had been fitted in the ends of the glasshouses in order to provide a constant circulation of air. He stated that some varieties were resistant to this disease, but unfortunately they were poor croppers.

Work was being done at Cheshunt in the breeding of an insect that was parasitic on white fly, and it was hoped that a sufficient number of these parasites would be available for distribution. Cyanide, whilst destroying white fly, would leave the parasite unharmed. For red spider, the lecturer advocated naphthalene fumigation and spraying with cresylic acid when the houses were empty. A most important rule to observe was the cutting down of the plants before the spider left them to go into hibernation in cracks or crevices where no spray could reach them. A new emulsified petroleum known as Volck, had been recently introduced and in controlling red spider Dr. Bewley believed that it offered great possibilities.

The employment of a mulch of clean straw was advised as a preventive of buckeye rot, as this would save the splashing of infected soil on to the lower trusses during watering.

When questioned as to the cost of steam sterilisation, Dr. Bewley assured his audience that, provided it was done thoroughly, it was most economical and the most satisfactory of all the methods tried so far. Its influence in increasing crop yields was quite remarkable.

An idea which emanated from Germany, that by increasing the amount of carbon dioxide in the atmosphere of the Tomtao house it would be thereby possible to add to the crop, had found a practical outcome at Cheshunt. Through using—for about two hours daily while the ventilators were closed—small portable stoves that burned charcoal, they had succeeded in obtaining a fifteen per cent. improvement in weight of crop.

A keen discussion followed, and at the close a cordial vote of thanks was accorded to the lecturer on the motion of Mr. E. Cousins, seconded by Mr. R. H. Pinkerton. The Chairman was thanked for presiding on the proposition of Mr. E. H. Christy, seconded by Mr. C. E. Searles.

FRUIT GARDEN.

NUT GROWING.

There are often many odd corners in the garden that might be usefully employed and made ornamental by planting them with Cob Nuts and Filberts, and the purple-leaved varieties.

Nuts are not particular as to soil, for they will flourish on chalk sub-soils and even in shallow soils over gravel, so that there is no excuse for their neglect. The best method of growing them, to secure maximum crops, is to interplant Filberts with Cob Nuts to ensure cross-pollenation, while most satisfactory results are obtained by training the bushes in an open "bird-nest" fashion, and pruning the lateral growths to form spurs.

Trees should be secured from a reliable nursery for varietal names are sometimes wrongly applied. If a few plants of the purple-leaved Nut are grown they will help to brighten the general appearance of the group.

The purple-leaved Filbert has leaves of a rich red-purple colour. It is a good cropper, producing dark purple Nuts with flesh-coloured kernels.

Kentish Cob, or Lambert's Filbert as it is sometimes termed, is a large-fruited variety. The shells are thick and of an attractive brown shade, while the kernels are full and richly-flavoured. This variety, that was raised by Mr. Lambert in 1830, is grown extensively in Kent for market purposes, for it is a great cropper, and the fruits keep in good condition for a long time; in fact, it is recorded that specimens have been kept in an edible condition for four years.

Kentish Filbert has long, pointed fruits that are richly-flavoured. It is a strong-growing variety, and should be grown in conjunction with such pollen-producing varieties as Pearson's Prolific and Prolific Filbert, to ensure fertilisation. This variety has long been in cultivation and is still grown extensively in the Nut-growing districts.

Merveille de Bollwyller has large, broad Nuts which are closely enclosed by downy husks. It is richly flavoured and is a good keeper, and has been in cultivation since 1845.

Duke of Edinburgh, a long-husked variety, has large, oblong, dark brown fruits that are thick-shelled and have richly-flavoured kernels. It is a long-keeping variety and was awarded a First Class Certificate by the Royal Horticultural Society so long ago as 1883.

Pearson's Prolific, with short, hairy husks and Nuts of medium size, is not so vigorous a grower as the majority of varieties, but it is a useful variety for pollenation purposes. *Pomona.*

VEGETABLE GARDEN.

THE CABBAGE.

Mr. Thatcher, who recently dealt with this subject in *The Gardeners' Chronicle* (see p. 125), must have a large staff at his disposal to cultivate the Cabbage in the way he suggests. Those who have frames or glasshouse space usually wish to grow something more delicate, if not more precious, than Cabbages.

Even if the accommodation is available, I question the advisability of coddling the Cabbage, for the result will be the softening of the plants, which the slugs will be sure to appreciate.

I have grown large quantities of Cabbages for market, as well as for private supply, and wish to impart to those with limited means what experience, both in Scotland and England, has taught me.

In Scotland the sowing of early Cabbages should be made about July 12, and in England about July 20. The seeds should be sown in an exposed border, not between other and taller vegetables. The drills should be at least one foot apart and half-an-inch deep, and one inch broad at the bottom. Cover the seeds lightly after sowing them, then, with the back of the rake, make the soil firm. Soil that is inclined to be heavy will produce the sturdiest plants, while the seeds should be so scattered that they do not touch each other. These details may be trifling, but they are important if plants of good constitution, to withstand the winter, are to be secured.

I have tried many varieties, and have found Ellam's Early Dwarf to be most satisfactory, for it is hardy, small and compact, and it is not liable to "bolt." It hearts early, and has few outer leaves, while the seeds are quite cheap—an important factor when one buys by the pound.

The seed-bed requires protection from birds, unless one is sowing down a large area, when a slightly thicker sowing will make allowance for the depredation of birds; for small beds a covering of netting will do.

The young plants should not be left too long in the seed-beds; in England they will be ready to plant by the first fortnight in September, while in Scotland an effort should be made to have them planted by August 31. The ground chosen for them should be in a position to catch the first rays of the morning sun, so that the effects of frost will be minimised; some parts of the garden lie frozen until midday in winter, and these should be avoided.

It is unnecessary to dig the ground before planting them as Cabbages like a hard root-run; levelling the surface with a fork is sufficient. Once I experienced such difficulty in planting Cabbages in undug ground that I stopped and forked the remainder deeply; the plants in the forked ground were later, and much inferior in constitution, and looked soft and poor in comparison with the others, so much so that it was remarked upon.

If the ground is poor, a liberal supply of manure should be dug in and the drills for planting may be tramped in instead of being drawn; they require to be drawn if the ground is hard. The plants should be dibbled in very firmly, about nine inches apart, and allowing eighteen inches between the rows. Putting the plants closely together will save filling the gaps in the spring; if they all survive, which is not unlikely, every alternate one may be pulled and used before reaching maturity.

More seeds may be sown in September, in Scotland during August. As there is a gap between autumn- and spring-planted Cabbages from the same sowing, the remainder of the July-sown plants will provide the first succession. All the large plants should be pulled out and discarded before winter sets in, to allow the remainder to get light and exposure. These last should be planted at the end of March.

The September-sown plants, which should be a large type of Cabbage, such as Large York or Wheeler's Imperial, may be transplanted in April. If a few seeds are sown, in a frame the seedlings will be ready for planting in May, and if more are sown outside in March or April they will be ready for putting out in early June. April-sown Cabbages, transplanted in early July, will provide a Christmas supply of the early Cabbage, which is much superior to the Drumhead or Cow Cabbage. If one has the time for sowing and pricking out, I recommend Winningstadt for this purpose.

The red pickling Cabbage is splendid for cooking so well as for pickling, while a late sowing of seeds of the Savoy will continue the succession until the spring. *George Murray, Rockley, Wiltshire.*

HOME CORRESPONDENCE.

A Giant Snowdrop.—Happening to notice in your issue of February 11 the description of Galanthus byzantinus with flower-stems seven inches long, I think the enclosed flower may be of interest. The stem, as you will see, is seventeen-and-three-eighths inches long, measured to the ovary, the sheath continuing upwards for another inch. The length of each outer petal, measured from its tip to its junction with the ovary, is fully one-and five-eighths inch. The flower is beginning to wither, but the slight pencillings of green towards the tips of the outer petals are still visible. The specimen appeared among a dozen G. Elwesii bulbs which I got from Messrs. Ware many years ago. It seems to be some variety or hybrid of that Snowdrop and it might well be named G. Elwesii var. giganteus. I grew it in a pot in an unheated glasshouse. *J. C. W., Aberdeen.*

[The measurements given are quite correct. —Eds.]

Lime or Chalk.—A paragraph on "Garden Manures" in *The Gardeners' Chronicle* of February 4 (page 86) reminds one of the very important point that lime is not sufficiently given in most gardens. Several thoughts concerning this occur to one as a practical gardener. The price of lime for a garden is very many times the price of ordinary limp chalk straight from a quarry; now, if quick-lime is applied direct to the soil it is automatically slaked, that is to say, it absorbs water and carbon dioxide almost at once, becoming calcium carbonate ($CaCO_3$), which is chalk. It has, therefore, a very brief action as a disinfectant of an active kind as quick lime, and from the point of view of providing calcium salts for the roots of the plants it is effective only after it has once again been re-formed into chalk—that is to say, returned to the condition it was before the expense of turning it into lime had been gone through. It seems, therefore, that unless special disinfectant value is required that the ordinary garden benefits just as much from chalk as from the much more expensive lime. If chalk is applied to the garden in small lumps (the size of filberts or slightly larger) it is easily scattered, and easily forked lightly in; it is broken up naturally by the winter frosts, and, if left, takes effect slowly and lastingly. Indeed, it is interesting to study a winter garden and see how the water crystallises as ice spicules around a small lump of chalk, and how this lump, after the thaw, is broken and fragmented. Of course, where grass lawns have to be limed, powdered chalk or lime would be necessary. But it seems that the ordinary gardener, to whom expense is an item of consideration, is better advised to apply small lump chalk than lime to ordinary vegetable plots. Any suggestions or experience from other readers of *The Gardeners' Chronicle* on this point would be of much general interest. *Marie Stopes, Hindhead.*

Mulching Roses.—I do not think that Mr. Stead will derive much benefit from some of Mr. Grigor Roy's methods as advised in his note in *The Gardeners' Chronicle*, page 118, at least, not in the north of England. I quite agree with him that mulching in autumn and early winter causes the soil to turn sour and heavy, and it also provides a refuge for pests. I prefer to apply dressings for all classes of bush Roses immediately after pruning, early in spring, consisting of a mixture of well-decayed farm manure and loam, previous to which I fork in a dressing of bone-meal. I suggest further dressings during May and August of a Rose fertiliser, which may be watered in if necessary. Mr. Grigor Roy would find that if he practised pruning bush Roses during November in the north of England, he would have to fill a good number of vacancies each year. Should a spell of mild weather come after following Mr. Roy's advice of pruning in winter, the shoots would probably start into growth. and there would be considerable damage done if we had a week or two of severe frost or cold wind. With reference to lifting Roses every three years, I think that this is unnecessary. If, in the first place, the soil was well prepared to a depth of two to three feet, drained, and if poor enriched with well-decayed manure, loam, leaf-mould, wood-ash, bone-meal and lime; and if, during each spring and summer, it is given a dressing of manure, loam and a fertiliser, the beds should last for at least ten years. *W. Thomas, Singleton Park Gardens, Poulton, Lancashire.*

Early-flowering Chrysanthemums.—Many of us remember the excellent trials of early-flowering Chrysanthemums at Reaseheath, that were instituted and supervised by Mr. James several years ago, and are glad to know from Mr. Shewell-Cooper's notes, in your issue of February 25, p. 134, that these trials are being continued. May I be permitted to correct the spelling of the word "Lichfield," the variety called "Litchfield" by Mr. Cooper is presumably "Lichfield Peach,"; this variety, along with Lichfield Pink, Lichfield Bronze, Lichfield Purple, Lichfield Early White and many other good varieties, including Crimson Circle, were raised by Mr. A. W. Thorpe, of Lichfield, Staffordshire. I had the privilege, two years ago, of seeing Mr. Thorpe's collection at Lichfield. Crimson Circle, as grown there, carried a fine crop of crimson blooms, the colour and shape reminding one of the old decorative variety, William Holmes, which was so popular over thirty years ago; the stems were over three feet high, and the blooms were large enough to satisfy any market buyer. Lichfield Peach is true to the raiser's description, Almond-blossom pink, but it does not withstand a wet season well in the north; if grown in pots, or if the blooms are protected from wet, it is one of the most delicate and pleasing shades of colour we have. Tarzan, mentioned by Mr. Cooper, and which is a seedling from Lichfield Pink, with us comes a clear pink, and is a good grower, with good foliage borne on stems three feet to four feet high. All Mr. Thorpe's plants are allowed to break naturally. The following are the best varieties grown by us in the north, selected from a collection of some sixty-five varieties. Framfield White, Framfield Pink, Harvester, Lichfield Pink, Crimson Circle, Dick Barnes and Harry Thorpe, all of which, if disbudded, are all that one could desire; Red Letter, a glorious single, is also splendid when so treated. Golden Gleam is a pleasing single, and one of the earliest to flower, while Red Riding Hood, Maidenhood and Waterwitch, all singles, are all good with us. Magnificent makes a grand bedding plant, as also do Kittie Riches and White Boy. I tried disbudding some of the old varieties last year of these, and the finest bronze in the whole collection was the old Nina Blick, which florists purchased readily. Perle Chatillonaise is one of the best for late sprays, while Mrs. Phil Page was better with us than Mrs. J. Pearson or Phoenix. In favourable seasons we have also had good blooms of Betty Sparks, from disbudded plants in early August. So far, we seem to lack good early-flowering yellow varieties; a good yellow, with the growth and habit of Harvester, would be an acquisition. *Dunelm.*

Superphosphate and Potatos.—In the issue of *The Gardeners' Chronicle* for January 28, page 69, Mr. Stewart states that he spread a mixture of superphosphate, sulphate of ammonia and sulphate of potash in the drills when planting Potatos. When a Potato is planted it has sufficient food stored in the tuber to feed it until it has made a considerable amount of growth; therefore it does not require manure immediately it is planted. Also, it is probable that the sulphate of ammonia was responsible for the strong, healthy haulm that is mentioned, and not the superphosphate, and as the sulphate of ammonia has a caustic effect on foliage, it might damage the sprouts if spread in the drill. It is very quick in action and is soluble in water, therefore the nitrogen it contains would be washed into the sub-soil before the tuber had developed a proper root-system. In my opinion, it is better applied while the plant is growing I think that a better method of applying the fertilisers is to spread the superphosphate and the sulphate of potash between the drills, shortly after planting, and work them into the soil with a cultivator or hoe; and to spread the sulphate of ammonia between the drills just before earthing up. Basic slag as a phosphatic manure for the allotments with a clayey soil would be preferable to superphosphate. *Gavin Brown, Craigo House Gardens, Montrose.*

PUBLIC PARKS AND GAROENS.

Birmingham Town Council has approved the proposal of the Parks Committee to purchase 158 acres of the Perry Hall estate at a cost of £31,760, for a public park.

Lincoln Town Council has decided to apply to the Ministry of Health for sanction to borrow money for the purchase of Boultham Hall and eighty acres of land, for a public park.

The London County Council is recommended to sanction a loan of £5,000, required by Lewisham Borough Council, as a contribution towards the cost of acquiring Cator Estate, Beckenham Place Park, for an open space, which is situated partly within the borough.

The Town Council of Bournemouth proposes to make application to the Ministry of Health for sanction to borrow £4,320 for the completion of the work at the Pine Road Recreation Ground.

Coupar Angus Town Council has agreed to purchase the park east of the Foxhall property for a public recreation ground.

The Kent County Council has granted an application by the Knockholt Parish Council for sanction to borrow £300 for the purchase of land for a recreation ground.

The Liverpool Corporation Finance Committee recommends an expenditure of £100,000 for the provision of a park at Otterspool.

Edinburgh Town Council is recommended to approve plans for a proposed recreation ground at Lochend, the cost of which is estimated at £6,000.

Barnet Urban District Council has received the sanction of the Ministry of Health to borrow £4,000 for the purchase of a recreation ground at Church Hill Road, East Barnet.

SOCIETIES.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

At the meeting held on Friday, February 10, the members of the Committee present were Messrs. J. B. Adamson (in the chair), A. Burns, A. Coningsby, J. Evans, A. Keeling, D. McLeod, W. J. Morgan and H. Arthur (Secretary). Messrs. F. B. Cypher and E. Lack were invited to sit with the Committee.

First Class Certificate.

Vuylstekeara ignescens (*Miltonioda* × *Odm. Harryanum*).—A fine flower, dullish crimson with white margin, and a broad, flat lip with deep, white base. From Mrs. Bruce and Miss Wrigley.

Awards of Merit.

Odontoglossum Llewelyn var. Black Prince, *Sophro-Laelio-Cattleya Vulcan var. Brilliant*, and *Cypripedium Memoria F. M. Ogilvie var. Mustiff.*—From J. B. Adamson, Esq.

Cypripedium Helsa var. Astrid.—From Mrs. Bruce and Miss Wrigley.

Cypripedium Nessius (*Becktoniae* × *Elise II*). From Captain W. Horridge.

Cattleya Tityus var. Regina.—From Messrs. Stuart Low and Co.

Botanical Certificates.

Restrepia striata and Masdevallia triangularis. From J. B. Adamson, Esq.

Cultural Certificates.

To Mr. J. Howes, for Vanda Amesiana and Odontoglossum Pegasus var. Stanley Baldwin.

Groups.

J. B. Adamson, Esq., Blackpool (gr. Mr. J. Howes), was awarded a Gold Medal for a group that included Odontoglossum Llewelyn var. Black Prince, O. Pegasus var. Stanley Baldwin, O. Tagus, O. Doris, O. Dorothy Arkle, O. loochristiense and O. crispum; Cypripedium Memoria F. M. Ogilvie var. Mastiff, C. Alabaster, C. Maudiae magnificum, C. Gowerianum var. Gratrixianum, C. Rossettii magnificum, C. Roundhead, C. Olympus, C. Thisbe, C. Enchantress and others; Sophro-Laelio-Cattleya Vulcan var. Brilliant; Brasso-Cattleya Ivernia; Coelogyne cristata, Chatsworth var., and others.

Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. A. Burns), staged a group to which a Large Silver Medal was awarded; it included numerous varieties of Lycaste Skinneri, Cattleya Blackii, Laelio-Cattleya H. T. Pitt, Vuylstekeara ignescens, Platyclinis uncata, and many Cypripediums.

Messrs. J. Cypher and Sons were awarded a Large Silver Medal for a group of Cymbidiums in variety, including C. Alexanderi var. aureum, Pauwelsii and C. Sybil.

Mr. John Evans was also awarded a Large Silver Medal for a group composed of Cypripedium Perseus var. Imperator, C. Beta, C. Rossetti, C. Whitecap, C. Alcibiades, C. illustre, C. Chloris and others; also a fine specimen of Odontoglossum Eros, with over eighty flowers.

Messrs. Keeling and Sons staged numerous Cypripediums, including C. Sumurum and C. insigne Snow Queen; Angraecum superbum and Cymbidium Vesta.

Captain W. Horridge (gr. Mr. A. Coningsby), staged Cypripedium Nessius (C. Becktoniae × Elise II).

Messrs. Stuart Low and Co. exhibited Cattleya Tityus Regina, Odontioda Alcazar, and Cypripedium Perseus Beta. Mr. D. McLeod staged Cypripediums in variety.

HORTICULTURAL CLUB.

Following the monthly dinner of the Horticultural Club, at St. Ermin's Hotel, Caxton Street, Westminster, on Tuesday, February 28, Mr. G. P. Baker gave an interesting address, illustrated by lantern slides, on "Plant Collecting in Crete." There were fifty present, and Mr. Gerald Loder, Chairman of Committee, presided.

Mr. Baker made three journeys to Crete, which for three centuries was subject to Turkey, but in 1914 it was allotted to Greece, the Turks were deported and 30,000 Greeks from Asia Minor settled on the island. He landed at Canea in the early summer of 1925, but proceeded to Candia, whence he made his first journey to Mount Ida. His second trip was in the autumn of 1926; he was given a letter of introduction to a Greek, Mr. Banakis, a retired major of the police, who acted as guide in the various expeditions undertaken to parts of the island. The view from Mount Ida, some 8,000 feet altitude, gives a panorama of hills that are covered with snow on their upper slopes until July. The plateau near the sea is hilly and undulating, and the cultivated parts are planted with Olives, vines and Locust Beans.

The forest region, at some 3,000 to 4,000 feet altitude gives place to the Oak, Maple, a few Pines and other trees, with a scrubby undergrowth. The low shrubs are of a very spiny nature, so that the inhabitants, both men and women wear boots up to their knees. In the warm valleys, the Orange, Citron, and Lemon, grow in great profusion. Mr. Baker showed lantern slides of some of the species of Oak, including a degenerate form known as Quercus calliprinos; on the way, skirting the north coast, he found plantations of Quercus macrolepis.

The upland plains are drained of their water through fissures and holes in the limestone rock, and the streams of fresh water often reach the sea without any intermediate re-appearance, so that the fishermen find a supply of fresh water even in the sea itself. Mr. Baker described a visit made to the Homalo Plain in the autumn of 1926, accompanied by Mr. Hiatt Baker. The plain is a health resort in summer, but only one of the low stone houses was occupied at the time of his visit, and the tenant, a Protestant Greek evangelist, supplied them with tea, made from Sideritis syriaca and Origanum Dictamnus. In this plain were growing the wild Pear, Acer cretica, a Crataegus and the Cretan Zelkova, which he was successful in bringing home on his second visit in the spring.

Bulbs grow there by the thousands, and in the spring he collected two varieties of Colchicum, Crocus Sieberi, a species of Tulipa not yet determined, Anemones, Muscari, Asphodelus and Romulea. The Scilla bulbs are used by the natives for salad. Many of the native plants are very aromatic; Cistus creticus, when bruised, gives off an aromatic oil, and Phlomis, Coridothymus capitatis, Salvia sideritis (?) and Thymelaea are all aromatic. Cyclamen graecum grows in cracks and crannies of the limestone rock, whence it is almost impossible to extract it.

At Theriso, Mr. Baker saw Cyclamen creticum growing in the wildest profusion—a small, white species allied to C. repandum.

The gorge of Askiphu is wild and beautiful. Trees and shrubs grow clinging to the rocky walls and on the ledges were Daphne sericea, Styrax officinalis, Staehelina arborescens, Linum arboreum, Tulipa saxatilis, etc. The last was mentioned by an Italian in 1680. In one of his trips, Mr. Baker collected seeds of Paeonia cretica, a fragrant, white species, but he did not see the plant in flower. The land, in parts, is carpeted with Ranunculus and Anemones, and all about are differently coloured Cistuses. In the sunny, low-lying country were large patches of Tulipa saxatilis.

It is estimated that there are 14,000,000 Olive trees on the island, yielding an average annual crop of 30,000 tons. Citrons to the total of some 1,200 tons are exported. Crete is rich in endemic plants, and one of the most interesting is the Zelkova, the tallest met with being twelve feet high. It has a small, Holly-like leaf and a contorted growth. One of the most interesting of the trees referred to by Mr. Baker was an evergreen form of Platanus orientalis, referred to by Pliny.

Mount Ida is exposed to high winds, but vegetation is found in hollows and crater-like depressions. In such places was found Prunus prostrata, also Onosma erectum. Atraphaxis Billardieri is associated with the Prunus.

The bulbous and tuberous-rooted plants are rich and varied. All around the lower hills about Canea are Anemones, such as A. coronaria, in white, scarlet, violet and rose; A. parviflora in various shades; A. stellata, A. Heldreichii, and another which promises to prove a new species; Narcissus Tazetta and N. serotinus, Cyclamen creticum and C. latifolium; Sternbergia lutea, several Colchicums, including a small one with white flowers collected within five hundred feet of Mount Ida; Ranunculus bullatus, R. brevifolius, R. peloponnesiacus, R. sprunerianus, etc.—in all, some eighteen species; Chionodoxa cretica, C. nana, Crocus Sieberi var. heterochromas, Tulips, etc.

Some light was thrown on the origin of the garden Tulip. The late Mr. Dykes was completely baffled by the problem, but he said that when the Turks grew large quantities in Constantinople several centuries ago, they used as the parents the Tulips from the valleys of Asia Minor, from which the wild bulbs were in time exhausted. One of these parents may have been Tulipa cretica, which is a scarce plant, even in its own habitat.

Mr. Baker gave some interesting details of the inhabitants, who, since the days of St. Paul, have been maligned. The Cretans are a simple race, with high morals. They are a very hospitable people, and Mr. Baker testified to their kindness to him on many occasions.

ORCHID CLUB.

The exhibition meeting held on March 2 was noteworthy for a remarkable series of photographs of Orchid species taken by Mr. B. J. Beckton of plants in his own collection, protraying accurately and clearly the particular habit of the plants, and the characteristics of the inflorescence in each case. The terse descriptive commentary appended to each photograph was enlarged upon by Mr. Beckton to the many interested members and visitors who came to the meeting. As a mark of appreciation of the work he has done in maintaining so representative a collection of Orchid species in cultivation and creating this record of their special features, the Committee awarded to Mr. Beckton the the Gold Medal of the Royal North of England Horticultural and Botanical Society.

Diplomas of Merit.

Cymbidium Caligula (*C. Gottianum* × *C. Castor*).—A flower of good shape; the sepals and petals are ivory white, and the large open lip is a uniform rose-purple, the column dark crimson. Shown by Dr. Craven Moore.

Odontoglossum Promerens, Beardwood variety.—A well-formed, round flower, three-and-a-quarter inches across; the sepals and petals are ivory white, with large, central, Indian-red blotches; the large, oblong, flat lip is white with small, crimson basal spots and a bright yellow crest. Shown by Sir J. Rutherford, Bart.

Odontoglossum Gorizia var. Congyngham.—A medium-sized flower three inches across, of excellent shape; the sepals and petals are of a uniform bright crimson, with a narrow, fimbriated, white edge; the large, flat lip has a white margin with central crimson blotches. The plant carried a full spike of eleven flowers. Shown by Dr. Craven Moore.

Cypripedium Margaret Ingham (*C. Memoria F. M. Ogilvie* × *C. Olympus*).—A large, well-proportioned flower carried on a long stem. The flat, oval dorsal sepal, three-and-a-quarter inches across, is white, the central and basal parts marked with closely-set, dark crimson streaks; the petals are well-displayed, yellowish-green, with crimson lines over the upper halves and the lip is of similar colour. Shown by Charles Ingham, Esq.

Groups.

Sir John Rutherford, Bart. (gr. Mr. Lupton), exhibited an extensive group of Cymbidiums and Odontoglossums, the former including several excellent hybrids of C. Parishii raised at Beardwood; also a fine variety of Brasso-Laelio-Cattleya Everest. Sir William Thom (gr. Mr. Williams) had an interesting group, including Cymbidium Martin, C. President Wilson and C. Pauwelsii, a good form of Odontoglossum Regium and Dendrobium Lady Colman and D. Butterfly. Mrs. Hardy sent a beautiful selection of well-flowered plants of Dendrobium Tyntesfield, D. Rubens and D. Lady Colman.

Dr. Craven Moore (gr. Mr. Gilden) staged a highly decorative group of Odontoglossums and Odontiodas, including several magnificent varieties of white Odontoglossum crispum hybrids, O. ardentissimum xanthotes var. Reine Blanch, O. Chintz, O. Pyramus, of beautiful colour and form, Odontioda Joiceyii, O. Maureen, O. Joan, O. Cilleham and O. Gardenia, and fine plants of Selenipedium macrochilum giganteum, Cymbidium insigne, and C. Alexanderi, Cusson's variety, which is the finest rosy type in cultivation.

A. T. Cussons, Esq. (gr. Mr. Dalgleish), exhibited a well-arranged group of Cypripediums, Cymbidiums and species. Among the Cymbidiums the beautiful C. Meydew was specially attractive, and of the species well-flowered plants of Dendrobium atro-violaceum and Laelia harpophylla were of particular interest. F. T. Paul, Esq., exhibited a collection of well-flowered, fine varieties of Lycaste Skinneri, and L. Balliae, and photographs in natural colours of Lycastes.

W. Morton Jackson, Esq., brought a spike of the beautiful Eulophiella Rolfei. Among the photographs shown by Mr. Beckton, the members were specially interested in Odontoglossum Cervantesii var. decorum, Polystachia paniculata, Mormodes Wendlandi, Pleurothallis ornata, Masdevallia deorsa and Aeranthes grandiflorus.

Obituary.

Alfred Gaut.—The death occurred on February 27 of Mr. Alfred Gaut, who was for many years Lecturer in Horticulture to the University of Leeds and the North Riding of Yorkshire. Up to 1895 he had held several important posts as head gardener in different parts of England, but in that year he was appointed Lecturer in Horticulture for Shropshire. In 1899 he took up the Yorkshire post, from which he retired in 1917, after eighteen years' service. In Shropshire, in addition to the county work, he held classes each year at Oswestry College, Cleobury Mortimer Agricultural College, and Market Drayton and Wem Grammar Schools. In a memorandum which he wrote on his retirement from Yorkshire, he stated that he visited during the eighteen years, for purposes of lectures and demonstrations, some of the best gardens in the county, where he found the highest horticultural talent. This was the most pleasant part of his work; members of the families who were at home were present and their head gardeners, and the people of the district were always made welcome. He added that during the whole of his career he could only record three cases where the owners of the gardens refused to open them to the public for the purpose of lectures. In 1917, Mr. Gaut retired to Leigh Sinton, near Malvern, but in 1926 he went to live with his son at Worcester. His wife predeceased him by twelve months. He leaves two sons; the elder is a schoolmaster in London, and the younger is Agricultural Organiser for the County of Worcester. Mr. Alfred Gaut was eighty-three years of age. In former years he was a frequent contributor to *The Gardeners' Chronicle*, and he was the author of *Seaside Planting of Trees and Shrubs*.

G. P. Milne.—The death of Mr. G. P. Milne has removed a notable personality from the seed trade of this country. Formerly with Messrs. F. and A. Dickson, and subsequently with Messrs. Dicksons, Ltd., Mr. Milne joined Messrs. Garton Bros., at Newton-le-Willows in 1898, and was appointed Managing Director of the firm at Warrington, a position he held up to the time of his death. During 1918, 1919 and 1920, Mr. Milne was President of the Agricultural Seed Trade Association of Great Britain, and during his period of office he was the means of raising £15,000 as the trust fund for the establishment of the National Institute of Agricultural Botany. Mr. Milne wrote numerous pamphlets on agricultural subjects, dealing chiefly with Clover and Grasses.

Francois Teisseire.—The death has recently occurred of M. Francois Teisseire, a well-known nurseryman, formerly of Nice, France, in his forty-eighth year. Since the war he had laid out and had the charge of a vast cemetery at Montfaucon-sous-Romagne, in the Meuse district, where 20,000 American soldiers were buried; he carried out this difficult work to the complete satisfaction of the American authorities, and overcame every obstacle with the sunny optimism and unflagging cheerfulness with which, as a southerner, he was richly endowed. He had received the distinction of the Mérite Agricole, a well deserved honour; he leaves a widow and children to whom the warmest sympathy is offered in their untimely loss.

ANSWERS TO CORRESPONDENTS.

Notice to Correspondents.—Caterpillars and other soft creatures should be sent packed with a piece of damp blotting-paper or damp newspaper in a small tin box, but flies, butterflies and moths should be folded lightly in a piece of paper and sent dry.

Correction.—With reference to the article on Primula Juliae and its Hybrids (p. 152), Mr. Will Ingwersen asks us to state that in the first paragraph, "China" should read Caucasus, and in the second column, twenty-third line, P. J. Gloria is stated to be the "largest flowering," this should read longest flowering.

Gardener's Notice and Compensation.—*E.* As head gardener, in the absence of any agreement or local custom to the contrary, you are entitled to one month's notice, and in such case the notice given by your employer was not sufficient. (2) You may have a good claim under the Workmen's Compensation Acts, provided there was no negligence on your part, but without full knowledge of all the facts, it is impossible to give a definite opinion on this point, and you should without delay consult a local solicitor, who would call on you in hospital.

Freesias Diseased.—*A. H. C.* The Freesias were badly attacked by Botrytis, which appears as small black bodies. The use of potash is said to give good results in restraining the disease. An application of formalin to the soil, or a two per cent. solution of carbon-bisulphide has been found efficacious.

Lawn Sand.—*J. R.* The recipe you give for a lawn sand is a very fair one, except that the quantity of sulphate of iron could be reduced to one pound, and replaced by one pound of common salt. The iron sulphate would continue in the soil for a long time and might prove injurious to the roots of the grass. Sulphate of ammonia has to be converted into nitrate before it can be taken up by the roots, and thus acts slowly. It should be powdered finely before it is mixed with the other ingredients, both for even distribution and to make it lie on the broad leaves until it deliquesces. Three ounces to the square yard might suffice, because it is better not to use it in excess. The large roots of Plantains and Dandelions are not likely to be killed by one application, but a good pinch of the lawn sand could be placed in the centre of strong specimens, without injury to the grass. Select a dry time for the application, March to May being the best periods, and allow time for it to act before it becomes diluted by rain.

Weevils amongst Fern Roots.—*E. G.* The grubs are those of the Vine Weevil. The great difficulty of detecting these Weevils is due to the fact that they feed principally by night and hide by day. An old method of reducing their numbers is to enter the greenhouse at night with a lantern, and catch them on the plants; or if you stand the plants on a white sheet and disturb them by a light at night, they will fall on the sheet and be caught easily.

Communications Received.—M. C.—G. F. G.—A. G.—M. C.—D. A.—L. B. C.—A. C. B.—E. E. T.—M. C. R.—J. C.—R. W. T.—J. M.—H. B.—A. E. T.—C. N.—T. H. E.—A. E. Y.—G. M. T.—H. F.

THE
Gardeners' Chronicle
No. 2151.—*SATURDAY, MARCH* 17, 1928.

CONTENTS.

Aalsmeer Flower Show ... 184
Adelaide Botanic Garden 185
Algae in a Sphagnum Bog 183
Alpine garden—
  Aethionema pulchellum 190
  Saxifraga Borisii ... 190
  The prickly Thrifts 190
American National Arboretum 184
Colonial appointment for a Glasgow Botanist 185
Farnham Park ... 183
Floralies Gantoises ... 183
Flower beds, planting a large group of ...188
Fruit register—
  Apple Lane's Oakland Seedling ... 196
Fruit tree parts, the names of 196
Fuchsias 188
"Gardeners' Chronicle" seventy-five years ago 185
Gladioli 197
Grass for games ... 197
Greenway, Mr. P. J. ... 183
Hardy flower border—
  Day-blooming Evening Primroses ... 190
  Dianthus Ipswich Crimson 190
Hot-water Plant, the 197
Indoor plants—
  Lapagerias 190
Iris Society 184
Mesembryanthemum... 194
Monaco's Jardin Exotique 192
Mycorrhiza, the rôle of, in plant growth ... 193
Obituary—
  Flemwell, G. ... 201
  Herzog, Karl ... 201
  Reinhardt, Carl ... 201
  Weathers, John ... 201
Primula, the genus ... 195
R.H.S. Gardens Club 184
Rhubarb, forced ... 197
Societies—
  Derbyshire Horticultural 200
  Manchester and North of England Orchid 200
  Royal Horticultural 198
  Salisbury Gardeners' 200
  United Horticultural Benefit & Provident 200
Strawberry troubles... 197
Superintendent, an ideal park 197
Trees and shrubs—
  A beautiful Willow 191
  Daphne Cneorum ... 191
  Daphne odora ... 191
  Erica australis ... 191
  Ilex latifolia ... 191
  Prunus illicifolia ... 191
Vegetable garden—
  Peas 196
Week's work, the ... 186
White, Mr. H. ... 184
Wisley Trials 184
Yew and other poisonous trees 194

ILLUSTRATIONS.

Aethionema pulchellum 185
Flower beds, plan of 189
Jardin Exotique, Monaco: succulents in 191, 192, 193, 195
Vanda Hookeriana 187
White, Mr. H., portrait of 184

Average Mean Temperature for the ensuing week deduced from observations during the last fifty years at Greenwich, 42.1°.

Actual Temperature.—

The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London, Wednesday, March 14, 10 a.m. Bar. 32. Temp. 39°. Weather, Foggy.

Floralies Gantoises.

The great continental horticultural event of the present year will be the nineteenth Quinquennial Exhibition to be held at Ghent by the Société Royale d'Agriculture et de Botanique de Gand. This will be opened on April 21 by Their Majesties the King and Queen of the Belgians —who will exhibit their famous specimens of Medinilla magnifica from the gardens at Laeken—and will remain open until April 29. The Palais de Fêtes will again be used for this international exhibition, but the area provided will be far larger than on any previous occasion. The huge building and annexes are set in a delightful public park, which will, of course, be isolated for the occasion. In former years the Ghent Show was looked forward to with keen interest because of the great struggle for supremacy which took place between the firms of Linden and Sander, both of whom scoured the earth—by means of their collectors—for new plants, and we have vivid recollections of the first time such popular subjects as Acalypha hispida and Dracaena Sanderiana were exhibited at Ghent. Those were great times, and the secret of these new plants was well kept until the day of the exhibition. Now, however, new decorative flowering and foliage plants are hard to come by, and the novelties of to-day are chiefly hardy shrubs, hybrid Orchids and alpine plants. Nevertheless, the Ghent Shows are invariably interesting, and the masses of gorgeous Azaleas, huge groups of Palms, Cycads and Ferns, and extensive displays of Orchids, are worth going a long way to see. The schedule for this year's show contains 770 classes arranged in twenty-eight groups, consequently the business of judging will occupy the attention of the members of the International Jury for a long period, and they will commence their duties at 9 a.m. on April 20, so that everything will be ready on the opening day. The list of judges has not yet been issued, but we know that Sir Frederick Moore, formerly of Glasnevin, has accepted an invitation, and we hope he will be able to attend, particularly as we believe no one will have judged at so many Ghent Quinquennial shows as he. Great exhibitions entail great expenditure, and before the exhibition opens on April 21 the Ghent Society will have incurred an expenditure of 1,300,000 francs on preparation, prizes, and social functions connected with the display—for Belgian hospitality is generous and gracious. Comte André de Kerchove de Denterghem, Governor of East Flanders —whose portrait appeared in our issue of March 3—is President of the Floralies Gantoises; M. Lucien de Cock, the Secretary; M. Henri de Wilde, Director and Designer; M. Francois Spae, Chairman of Committee; M. Maurice Duquesnoy, Treasurer; and M. C. Pynaert, President of the Foreign Sections, while MM. P. Duchaine and Paul Henen are the Presidents of the Press Committee, on which four British horticultural journalists are serving. The organisation of the Floralies Gantoises is a big business and in the hands of big-hearted men. For British horticulturists, the 1928 show will have a peculiarly attractive feature, *i.e.*, the British Section. Five years ago the Chamber of Horticulture successfully organised a British Section, but as that body has ceased to function, the British Florists' Federation offered to organise a section for 1928. This offer was accepted, and a committee has been formed with Mr. George Monro, C.B.E., as President; Mr. David Ingamells, as Vice-President; Mr. H. Jolis, Director, and Mr. C. H. Curtis, Secretary. The Committee includes representatives nominated by the Royal Horticultural Society (Mr. T. Hay and Mr. W. R. Oldham), and the Horticultural Trades Association (Mr. E. Laxton and Mr. L. Russell), and both Societies have promised donations towards the expenses of this demonstration of British horticulture. Although distance and transport difficulties impose certain restrictions, we feel sure that British horticulture will not suffer at Ghent by comparison with the displays of France and Holland. An Old English Rose garden will be the chief feature of the British Section, but there will also be exhibits of Carnations, Clematis, vegetables and new plants, and an effort is being made to make these last a prominent feature, therefore those who have new plants and flowers and desire to display them should communicate with Mr. Curtis (5, Tavistock Street, W.C.2.) so quickly as possible, as time is passing swiftly and space is limited to about 2,500 square yards. Those who are not able to send exhibits are invited to contribute towards the expenses of the section. Growers who have already promised exhibits include Messrs. Sutton and Sons, Messrs. Stuart Low and Co., Messrs. Sweet and Son, Messrs. L. Russell, Ltd., Mr. P. Ladds, Mr. C. Engelmann, Mr. A. F. Dutton, Mr. H. T. Mason and Mr. W. E. Wallace. Arrangements will be made to receive the exhibits at the warehouses of Messrs. George Monro, Ltd., Tavistock Street, Covent Garden, whence they will be dispatched to Ghent. Full particulars of times, etc., will be sent to intending exhibitors. We believe that certain British Orchid specialists will exhibit in the Orchid section of the show. Additional British interest attaches to this year's show by reason of the fact that the Lord Mayor and Sheriffs of London will attend. Yet another function will add to the interest of the Ghent Show of 1928, and that is the Conference of the Fédération Horticole Professionnelle Internationale. Delegates from Great Britain, France, Belgium, Holland, Switzerland, Germany and Luxembourg will attend, so that this also will be a great international gathering and, as usual, visits to places of interest will be arranged in connection with it. From these brief statements it will be gathered that the nineteenth Ghent Exhibition will be unusually attractive; we urge intending visitors to make prompt arrangements for hotel accommodation, and may add that every room in the Hotel de la Poste has already been engaged for the period of the Floralies Gantoises.

Appointment from Kew.—Mr. P. J. Greenway, formerly a student gardener at the Royal Botanic Gardens, Kew, and lately Herbarium Assistant at the Imperial Forestry Institute, Oxford, has been appointed Systematic Botanist at the Amani Research Institute, Tanganyika Territory.

County Council Elections—Mr. James Kelway, J.P., of Messrs. Kelway and Son, Langport, has been returned, after a contested election, to represent the Langport Division of Somerset. The retiring Councillor was his father, Mr. William Kelway, J.P., now in his eighty-eighth year.

Farnham Park.—We learn that the Farnham Urban Council has, by a unanimous vote, recommended to a town meeting that Farnham Park should be purchased for the public. This park has an area of nearly three hundred acres, of which twenty or thirty acres are to be retained to preserve the amenities of Farnham Castle. The Ecclesiastical Commissioners have apparently fixed the sale price to the town in the neighbourhood of £10,000, and it is suggested by the Council that a loan for this sum can be raised by a rate of 1½d. in the pound.

Algae in a Sphagnum Bog.—The results of observations made in a Sphagnum bog over a period of five years, by Mr. A. M. Smith, were communicated to the meeting of the Linnean Society on March 1. These observations were taken at approximately monthly intervals of the algae of a small Sphagnum bog near Bradford, from March, 1923, to to August, 1927. Observations of the temperature and of the p_H values of the water were also made. Two main algae associations were clearly distinguished: (1) the association of the Sphagnum pools, and (2) the association of the mud pools and deeper ditches. The association of the Sphagnum pools has Zygogonium ericetorum and Microspora floccosa as co-dominants, and Cylindrocystis Brebissonii, Tetmemorus laevis, Staurastrum punctulatum, Oedogonium rufescens, Sphaerocytis Schroeteri, Merismopedia glauca, Oscillatoria tenuis, and Navicula spp. as the characteristic subordinate species. The association of the mud pools and deeper ditches has Mougeotia sp., Mougeotia viridis, Microspora tumidula and Microspora stagnorum as its dominants, and Mougeotia parvula, Closterium striolatum, C. rostratum, Hormidium subtile, and Tabellaria floccosa as its chief subordinate species. After the drainage of the bog in 1923, the Sphagnum association decreased, and the long, slow choking of the bog channels which followed later was accompanied by the gradual extension of this characteristic association. The total quantity of alga in the bog varied with the quantity of water in the bog, and showed little evidence of any check due to low temperatures. The quantity of certain species, however, *e.g.*, a sterile species of Mougeotia, showed signs of diminution due to low winter temperatures. Mougeotia viridis, Cylindrocystis Brebissonii, and Oedogonium refuscens were frequently found in conjugation. Mougeotia parvula and Closterium parvulum conjugated rarely. The other species remained sterile.

Wisley Trials.—The Royal Horticultural Society will carry out, in its Gardens at Wisley, trials during the next two or three seasons of Canterbury Bells, Mossy Saxifrages, Asparagus, and hardy Clematis. One packet of seeds of each variety of Canterbury Bell, twelve roots of Asparagus, and three plants of each variety of Saxifrage and Clematis intended for the trials should be sent so as to reach the Director on or before March 31, 1928. They should be addressed to him at the R.H.S. Gardens, Wisley, Ripley, Surrey.

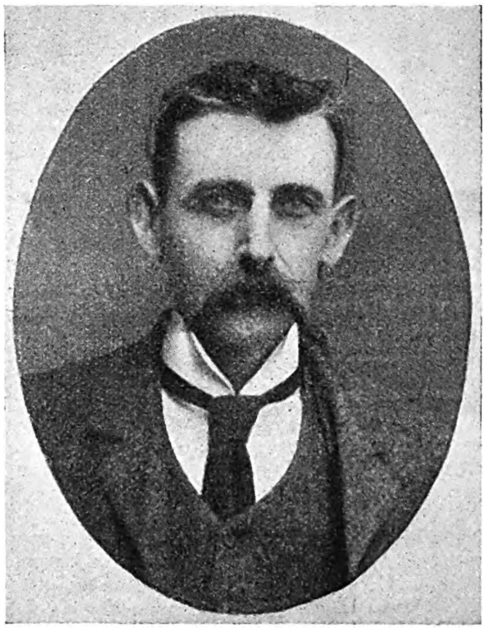
Horticultural Anniversary at Bruges.—On Saturday, March 3, the famous horticultural establishment at Bruges, Belgium, known as "Flandria," celebrated its thirtieth anniversary. Many notable personalities were present at the commemorative festivities, including the Governor of West Flanders, M. H. van Orshoven, the Director of Horticulture, the Burgomasters of Bruges and Assebrouck, and M. Schram, Director of the Maritime installation at Zeebrugge, together with the administrative and directing staff at Flandria.

The Iris Society.—A General Meeting of this Society will be held at St. Ermin's Hotel, Westminster, S.W.1, on Tuesday, March 20, at 6 o'clock. The meeting will be followed by a Dinner at 7.45 p.m. (morning dress), 10/6 per head, exclusive of wines (payable at the table). Questions of horticulture will be discussed, also the arrangements for the Iris Society's Show on June 8.

Aalsmeer Flower Show.—His Royal Highness Prince Henry of the Netherlands has been graciously pleased to become the Patron of the Great Aalsmeer Flower Show, to be held from April 17 to April 21. The Chairmanship of the Honorary Committee has been accepted by His Excellency the Minister of the Interior and Agriculture, and this Committee will include His Excellency the Minister of Foreign Affairs, His Excellency the Minister of Public Works, the Governor of the Province of North Holland, and the Ambassadors of France, Sweden, Switzerland, Austria, Great Britain, Hungary, Belgium and Germany. Moreover, about sixty Dutch and foreign authorities have promised to be members of the Honorary Committee, while twelve nationalities will be represented on the Jury.

"Journal" of the R.H.S. Gardens Club.—The membership of the R.H.S. Gardens Club is now about four-hundred-and-fifty, composed of those past and present students and officials employed either at the Royal Horticultural Society's old gardens at Chiswick, or at Wisley. Two of the oldest members are Mr. John Fraser, V.M.H., and Mr. T. Fraser, both of whom went to Chiswick in 1880. As in the case of the somewhat similar Kew Guild, the members are distributed throughout the world; there are old Chiswick and Wisley men in Natal, Barcelona, New York, Honduras, Guernsey, Tanganyika Territory, South Australia, Madras, Nyassaland, Poland, Rhodesia, France, Quebec, Ceylon, Oslo, Ashanti, Jamaica, Patiala, Federated Malay States, British Columbia, Victoria, Maritzburg, Boston, California and the Argentine. The *Journal* records the movements of members and gives their addresses, while there are special articles on "Plant Hunting on Mont Cenis," by Mr. J. T. Harris; "Gardens a Social Asset," by H. E. Seaton; "British Plants in the Rock Garden," by Mr. L. B. Creasy; and "Local Weather Forecasting," by Mr. G. E. Hindley. In addition, there are references to the Club outing at Sir William Lawrence's garden at Burford, and Miscellaneous Notes. The *Journal* also contains an illustration of the new Alpine house at Wisley, and one of the memorial to our late colleague, Mr. James K. Ramsbottom—a memorial that now occupies a position in the Laboratory at Wisley. As usual, Mr. John Fraser, V.M.H., the Editor, has produced a very interesting *Journal*—the twentieth of the series.

Mr. Harry White.—Famous as a propagator and cultivator of the rare and newer trees and shrubs, Mr. Harry White, of the Sunningdale Nurseries, Windlesham, commenced his business life at the early age of nine years with very few advantages beyond a natural aptitude for gardening and a desire to achieve success in whatever he undertook. After serving as an errand boy and doing all sorts of odd jobs for about four years, his employer sent him with a note to the late Mr. Charles Noble, of Sunningdale Nurseries and told him to wait for an answer. The answer was an invitation from Mr. Noble to start work under him on the following Monday morning; the note was a generous commendation of young White's character and industry, so in March, 1870, Mr. White started his horticultural career at the munificent wage of 4s. per week! At this period the Nurseries extended to about 150 acres, and about fifty men and boys were employed, all of whom worked from 6 a.m. to 6 p.m., six days a week, so long as the days were light enough to enable them to do so. Rhododendrons were grown very largely, especially for export to America and they consisted chiefly of the R. catawbiense type as these were found to suit the American soil and climate. Young White soon began to love his work and acquired a special liking for the whole tribe of Ericaceous plants, and as he was occupied chiefly among them, he soon obtained an intimate knowledge of species and varieties. Garden varieties of Rhododendrons then numbered about two hundred, as the day of the Chinese species had scarcely arisen, only one, R. Fortunei, sent home to Messrs. Standish and Noble a few years earlier, being cultivated. Very soon he felt his lack of education and approached Mr. Noble on the subject, who arranged that young White should be taught on two evenings a week by the village school master. This part of his education was maintained regularly over a period of five years. A German nurseryman's son came to the Sunningdale Nurseries and young White was asked by Mr. Noble to give him all possible help in regard to the English language. This he did, and in return the well-educated German lad taught Mr. White the elements of botany and together they studied the native flora of the Sunningdale district. A little later, Sir Joseph Hooker, formerly Director of the Royal Botanic Gardens, Kew, built a house at Sunningdale and Mr. Noble laid out the grounds for him. Close by this site, Mr. White and his German friend had found a small colony of Gentiana Pneumonanthe, and one evening when he had occasion to visit Sir Joseph he gathered a few Gentian flowers on his way. Sir Joseph noticed the flowers and said "Where did you get them and do you know that is a very rare British plant?" Mr. White was eager to show his colony to so great a botanist and together they went to inspect it. On the way they discussed British wild flowers and when Sir Joseph discovered that young White had studied Bentham's *British Flora*, he observed, "You shall have one of mine," and very shortly afterwards Mr. White became the possessor of an autographed copy of Hooker's *Student's Flora of the British Isles*—a copy he still treasures. Many years later Mr. Fenner, the Manager of the Nurseries left Sunningdale, and Mr. White was appointed temporarily to fill his place; he carried out his duties so satisfactorily that he was eventually made manager, a post he held until Mr. Noble sold the Nurseries, having no son to succeed him. Part of the Nursery was purchased by Sir H. H. Longman, Bt., for whom Mr. White continues to conduct the business. Mr. White and Mr. George Harrow—formerly manager of Veitch's Coombe Wood Nurseries—are very old friends and in the spacious Veitchian days they frequently exchanged visits, to their mutual advantage. When seeds of the Chinese and Tibetan Rhododendrons came to this country, Mr. White obtained a share and raised many thousands of plants and grew them so remarkably well that the late Prof. Sir Isaac Bayley Balfour visited him for the purpose of diagnosing the several forms that had arisen among R. habrotrichum. One of them, named R. diphrocalyx, a hose-in-hose form, appeared in the Sunningdale seedlings. Mr. White has won through, notwithstanding early disadvantages and has only himself to thank for his present position and the very high esteem in which he is held by those members of the horticultural trade who deal especially in trees and shrubs, particularly the newer and rarer kinds.



MR. H. WHITE.

Vilvorde Horticultural College.—M. Van der Kam, who has been for the past twenty-two years Principal of the State Horticultural College at Vilvorde, Belgium, has just retired, and has received the Order of the Crown, with the rank of Officer, in recognition of his services. His successor will be M. A. Van Wijngaerden.

A New Gardening Paper.—Following shortly on the demise of *The Garden*, which our readers will recall ceased publication in December of last year, a new gardening paper has appeared under the title of *Home Gardening*, published by Messrs. C. Arthur Pearson, Ltd., at the popular price of twopence weekly. It is apparently intended for the amateur gardener or allotment holder, and has matter of interest in the home as well as the garden, such as cookery notes, and directions for fancy work.

American National Arboretum.—Arrangements for the purchase of a large tract of land, consisting of approximately 400 acres, in the region of Mount Hamilton and Hickey Hill, for the construction of a National Arboretum, have met with a serious set-back in the refusal of the landowners, at least, some of them, to sell their land. The sum allocated to the Department that has charge of this scheme is 300,000 dollars, while a recent Bill, passed by the American Congress, limits the purchase price of any land, for this purpose, to 25 per cent. more than the assessed valuation. Several owners have agreed to these terms, but other landowners are not so reasonable, and several of them are asking exorbitant prices, in some instances so much as twelve times the assessed valuation. Apparently no action may be taken by the authorities to enforce the reduction of these demands, so that definite consideration is now being given to another tract of land some little distance away, which is well adapted for arboretum purposes, but does not possess such ready means of access as the originally proposed site.

Adelaide Botanic Garden.—The hopes, disappointments and successes that attend the cultivation of plants are not confined to any one place or country. We learn from the *Report* of the Adelaide Botanic Garden for 1926-27 that the weather was very trying by reason of the very high temperatures during January, 1927, when the shade readings were 108°, 108°, 103°, 105°, 110° and 102° respectively from the 9th to the 14th of that month, but "owing to close attention by the staff and judicious watering, very few plants were lost, despite the fact that many were badly scorched." The rainfall from July, 1926, to June, 1927, was 19·17 inches, as compared with 17·65 inches in the previous twelve months. The popularity of the Garden shows no diminution, and it is recorded that on fine days during the school vacations it is thronged with children. Roses appear to provide one of the features of the floral display, and new varieties are planted for educational purposes as well as for effect; thus we learn that Frau Karl Druschki has given place to Lorraine Lee, and Shot Silk has been substituted for Viscountess Folkestone. The *Report* deals with many interesting subjects, such as the birds that inhabit the Garden, the Library, the Museum of Economic Botany, distribution of plants, superannuation, and the Type Orchard to which forty-three varieties of Apples, eleven of Pears, thirty-seven of Plums and one-hundred-and-twenty of Peaches were added during the year under review. The *Report* is rendered doubly interesting by reason of the eight excellent illustrations of special features, including one of the Victoria regia—a picture that well illustrates this plant, and that might have been taken in the Victoria regia house at Kew.

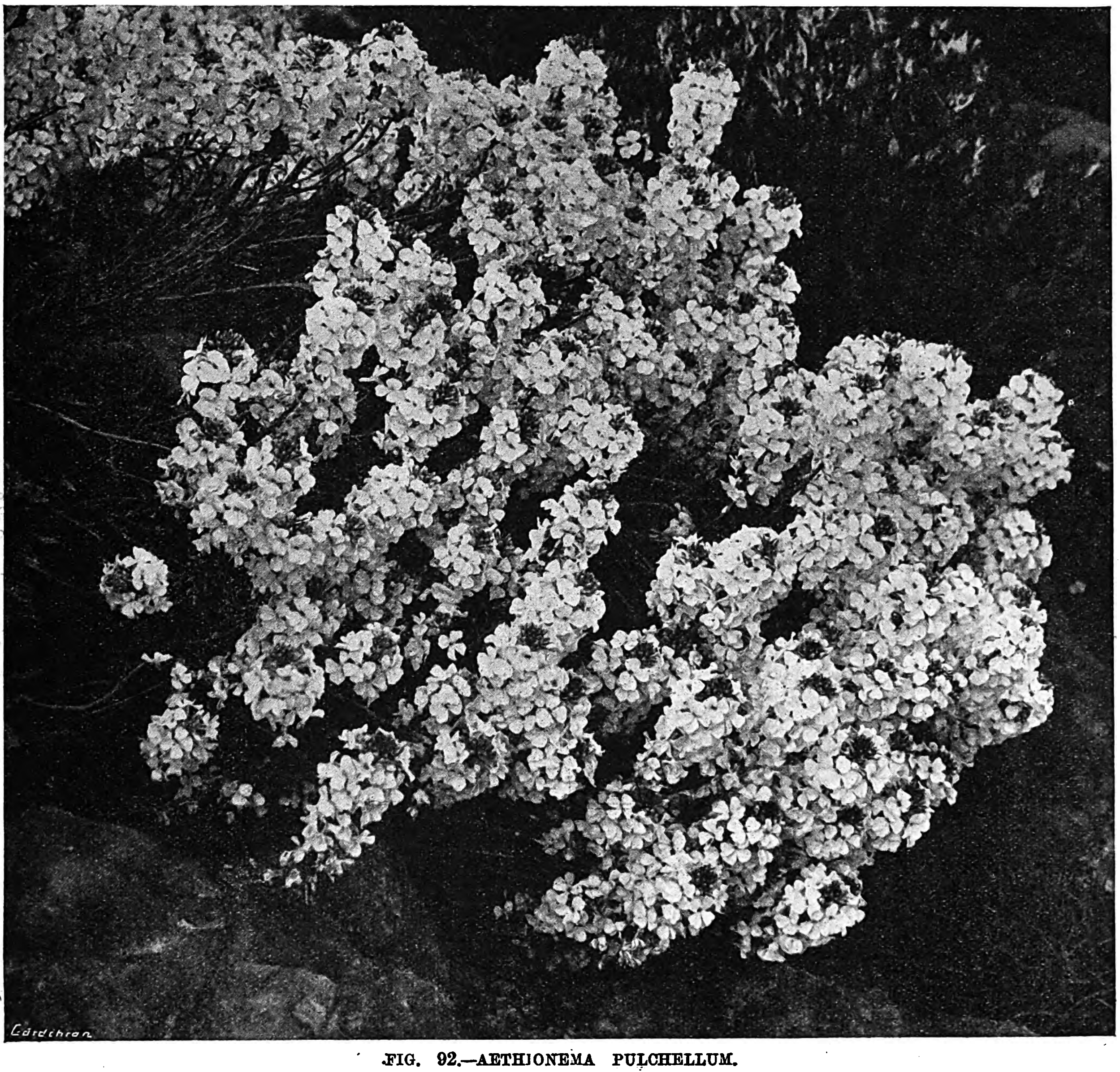


FIG. 92.—AETHIONEMA PULCHELLUM.
(see p. 190.)

Colonial Appointment for a Glasgow Botanist. Official announcement is made of the appointment of Dr. Claude W. Wardlaw, Lecturer in Botany at the University of Glasgow, to be Plant Pathologist for Banana research at the Imperial College of Tropical Agriculture, Trinidad. Dr. Wardlaw, who was the first student to gain first-class honours in botany under the new regulations in 1922, was appointed Assistant in Botany in 1921, and Lecturer—with special reference to mycology—in 1926. He is the author of a number of scientific papers on morphology and plant pathology, and on the Lanarkshire Strawberry disease. For morphological work he gained the higher degree of Ph.D. in 1925, and was elected Fellow of the Royal Society of Edinburgh in 1927. His new post offers admirable opportunities both for fundamental research on plant diseases under tropical conditions, and for the achievement of practical results in connection with one of the most important aspects of the Empire fruit industry.

Appointments for the Ensuing Week.—MONDAY, MARCH 19: Birmingham Gardeners' Mutual Improvement Association's meeting. TUESDAY, MARCH 20: Winchester Horticultural Society's meeting. WEDNESDAY, MARCH 21: Instow Flower Show; London Gardens Guild Lecture; Pangbourne Gardeners' Mutual Improvement Association's lecture. FRIDAY, MARCH 23: Manchester and North of England Orchid Society's meeting.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Planting Railway Slopes.*—It appears that there is a great want of Willows and Osiers, for basket-making, in this country, owing to a quantity of the land being required for other purposes. An immense number of plantations has been destroyed, consequently Willow-rods, etc., used in the basket trade, are very scarce, and in great demand, and prices will, in all probability, be doubled. Under these circumstances I would suggest, as the embankments and slopes on railways are generally moist, serving as they do to drain the surrounding land, that these might be planted with profit and advantage. Planting would answer two purposes—the roots would keep the soil from constantly crumbling down, and the plants would be ornamental. The second year after planting, the stools might be cut, and they would afterwards yield an annual revenue. The outlay in the first place would be trifling, as a cutting might be put in at three feet apart every way, all over the land at once. All the preparation required would be to turn the turf down with a spade to the extent of a square foot, insert the cuttings, tread the ground firmly round it, and the operation is finished. May I therefore direct the attention of railway managers to this suggestion. *J. R. Gard. Chron., March* 12, 1853.

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven Moore, Manchester.

Vandas.—Many species of this genus, V. Sanderiana, V. Bensonii, V. tricolor and others are now showing signs of renewed activity, and may therefore receive attention. Healthy plants that have not lost their lower leaves should have the compost carefully removed, and all decayed roots cut away, without disturbing the sound ones. Arrange the drainage correctly, and work in fresh rooting material of fibre and Sphagnum-moss amongst the sound roots, adding lumps of charcoal occasionally, and covering the surface with a little extra moss. Plants that have lost their lower leaves and have become leggy, should be turned out of their pots and as much of the lower portion of the stem may be removed as the roots will permit, so as to bring the leaves down to the top of the receptacle. Arrange the plant and roots in position and then half fill the pot with broken crocks and charcoal, bending so many roots into it as possible, and then filling the pot with compost. Give them sufficient water to wet the compost through, after which very little water at the roots will be required until they are well advanced, but the soil surface and surroundings should be sprayed regularly. Grow the plants in the humid and buoyant atmosphere of a warm house, and shade them from strong sunshine. Vanda teres, V. Hookeriana (Fig. 93), an attractive but rather shy-blooming species, and the hybrid V. Miss Joaquin, should be grown in a sunny position in the warmest position in the warmest house, where they can be sprayed several times daily during the growing season. Vanda coerulea, V. Watsoni, V. Amesiana and V. Kimballiana succeed well in a light airy position in a cool, intermediate temperature, and only need shading from very strong sunshine.

Aerides, Rhynchostylis and Saccolabium.—The large-growing species, such as A. Lawrenceae, R. retusa and S. giganteum, require similar treatment to Vandas, though some of the smaller growing species, such as A. odoratum, A. maculosum and S. ampullaceum, may be grown in baskets suspended near the glass.

THE KITCHEN GARDEN.

By Allan Falconer, Gardener to the Cheadle Royal Mental Hospital, Cheadle, Cheshire.

Onions.—The seedlings that are growing in seed-boxes should now be gradually hardened in frames; they should not be forced, for small, sturdy specimens are likely to give the better results. During the month a good dressing of soot should be applied to the ground in which they are to be planted; it may be forked in to a depth of six inches, and lime may be applied at a later date if the ground is deficient of it. Early in April the plot should be marked out into beds four feet wide, with one foot between each, the soil being shovelled from the alleys on to the beds, which should be prepared and allowed to settle ready to receive the Onions at the end of the month. These may be put in rows, four to each bed, with six inches between each plant. By this method all the planting may be done from the alleys, and there is no necessity for walking on the beds once they have been firmed ready for planting; on very heavy land this is important. If seeds of Onions are usually sown outside, the first opportunity should be taken when the ground is in a suitable condition, to give it a good dressing of soot or lime, and wood-ash. This should be forked in, well-stirring the soil, and breaking up the lumps as finely as possible. In due course the surface may be raked, collecting all rubbish and large stones, and the beds may be marked out. Draw very shallow drills twelve inches apart, and sow the seeds thinly, firming the ground after they have been covered. Directly the seedlings appear, dust them with soot, and hoe the soil between the rows; soot will tend to prevent attacks by the Onion-fly. In districts where this pest is prevalent it is advisable to resort to hand-weeding in preference to hoeing.

Peas and Broad Beans.—Transfer the seedlings that are growing in heat to cold frames, to harden them prior to planting them toward the end of the month. On warm soils seeds may be sown now, and by placing a layer of sand in the drills, germination will be assisted. The drills should be made wide enough apart to give the resultant plants ample growing space; the spaces between the rows may be planted with early Cauliflowers. Peas for exhibition purposes are best raised from seeds sown in boxes. If long, narrow receptacles, six inches wide at the bottom and narrower at the top, with a loose bottom supported by a wire at each end, are used, the soil may be transferred to the trench without checking the growth of the Peas, which may be staked so soon as planted as a protection against cold winds. More seeds of Broad Beans may be sown in boxes, to follow those that were sown earlier.

Carrots and Turnips.—A small quantity of seeds of these may be sown on a warm, south border to provide a succession to those that were sown in frames. A short-rooted type of Carrot is best for this purpose. Turnips from this early sowing often run to seed, but if they are pulled when very small they will prove a great acquisition.

FRUITS UNDER GLASS.

By T. Pateman, Gardener to Sir Charles Nall-Cain, Brocket Hall, Hertfordshire.

Early Peaches in Pots. — Peaches and Nectarines that are growing in pots, which were started into growth during last December, will now be passing through their stoning stages. The fruits will appear to make very little progress until this period is passed, and the grower should give a little extra care with regard to watering and feeding them. Where the soil is known to be deficient in lime a little may be added to the water on several occasions while the stones are forming. Should the weather be mild the night temperature of the house may be between 60° and 65°, but on cold nights the lower temperature will suffice. After closing the house in the afternoon the temperature may rise to 75° to 80° by sun-heat, but on cold, sunless days such heat is undesirable. The growths should be stopped at the sixth or eighth joint, so that the fruits may be well exposed to the sun. It is most essential to keep the foliage free from insect pests, such as red spider and green or black fly; the former may be kept in check by the free use of the syringe whenever possible, while the latter may be destroyed by fumigation, but if they are left until the leaves curl up some trouble will be experienced before they are eradicated. I do not advocate the use of the syringe late in the afternoon during sunless weather; it is better to rely on damping of the bare ground and wall spaces to provide a growing atmosphere.

Temperatures and Ventilation.—At this season of the year care is needed to comply with the effects of rapid changes in the temperatures of fruit houses, caused by sudden bursts of sunshine that are often followed by cold storms in quick succession. It is surprising how quickly the temperature falls on these occasions, and unless immediate attention is given in admitting or shutting out fresh air on these occasions the occupants may experience a check which may prove disastrous. Night temperatures are another important factor at this season of the year; guard against excessive heating of the hot-water pipes, as this will produce an arid atmosphere, but rather aim at providing a steady temperature suitable for free growth. Conserve so much of the sun's warmth as possible by closing the houses early, and thoroughly damping the floors to create a growing atmosphere.

Strawberries.—The earliest fruits will now be swelling freely, therefore continue to feed the plants with liquid manure until such time as the berries show signs of colouring, when it may be discontinued. To secure berries of the finest flavour it is necessary that the plants should be moved to a cooler temperature, with plenty of fresh air and a drier atmosphere, for a few days after they are coloured.

PLANTS UNDER GLASS.

By J. Coutts, Assistant Curator, Royal Gardens, Kew.

Begonias.—Continue to insert cuttings of the Lorraine varieties as they become available, while, if it is possible, they should be secured from the base of the plant. If suitable cuttings in sufficient quantity can be obtained, there is no need to trouble about raising plants by the more lengthy process of inserting leaf-cuttings. Earlier-rooted plants may be potted on as they require it, keeping them well up to the roof-glass, in an average temperature of 60° to 65°, and in a moist atmosphere. Attacks of Begonia-mite must at all times be guarded against and may be checked by spraying the plants with a nicotine compound, but the best cure and preventive is the sulphur-vaporiser. If eelworm has proved troublesome it will be wise to sterilise all soil that is used for Begonias and other plants that are likely to become affected. Where infection is prevalent it is advisable that all standing material on the stages should be discarded, and the benches should be thoroughly saturated with a carbolic solution, or some other soil disinfectant, before placing fresh material on them. There are a number of Begonias of a shrubby or sub-shrubby habit that might be grown with advantage in the intermediate or ordinary greenhouse. They include such fine subjects as B. metallica, B. echinosepala, B. Haageana, B. coccinea and B. fuchsioides, all of which will make large specimens; B. coccinea and B. fuchsioides give the best results if they are planted out in a well-drained border and trained up a wall or pillar. B. President Carnot and B. Lugerna, are two fine hybrids that make good specimen plants, while other species suitable for growing on the stages are B. Evansiana (syn. B. discolor); B. Dregei, one of the parents of B. Gloire de Lorraine; B. Sutherlandii and B. acuminata. Of the hybrids there are B. ascotiensis, B. Ingramii and B. weltoniensis, all of which are easily propagated by means of cuttings. B. Rex varieties also prove very useful, the stronger-growing sorts being suitable for partially-shaded places; they may all be propagated by means of leaf-cuttings. At the time of writing, B. manicata, B. phyllomaniaca, B. hydrocotylifolia and B. conchaefolia are all making a good display, producing numerous small, pink or rose-coloured flowers.

HARDY FRUIT GARDEN.

By T. E. Tomalin, Gardener to the Earl of Bessborough, Stansted Park, Emsworth, Sussex.

Protection from Frost.—The protection of the blossom of fruit trees growing on walls from occasional frosts, and from the damaging effects of cold easterly winds, will be the chief anxiety of fruit growers during the next few weeks. The delicate flowers of the Apricot require the protection afforded by curtains of tiffany, or Hessian canvas, which may be drawn over the trees at night and removed in the morning; although care must be taken not to withdraw the protection too hastily on occasions of exceptionally severe frost, when the trees should be allowed to thaw gradually before exposing the flowers to direct sunshine. For the slightly less tender blossom of Peaches and Nectarines, a double thickness of fish-netting will usually give adequate protection; this should be hung over the trees at a distance of fifteen inches from the wall. Besides protecting the blossom from frost, this covering will also mitigate the effects of cold easterly wind, which is often the forerunner of leaf-curl disease. The many varieties of Plums and Gages vary considerably in their susceptibility to damage by frost when in flower. Hardy varieties, such as Diamond and Czar, will come through several degrees of frost unscathed, but the choicer dessert varieties are more tender, and will repay the extra trouble of covering on frosty nights. Pear blossom is easily damaged by frost, and, failing the provision of tiffany covers, much may be done to avert loss by hanging Spruce boughs amongst the branches, or even sheets of paper may be placed over the blossoms in an emergency; but whatever form the covering takes, it must not be in direct contact with the flowers, or more harm than good will be the result.

Pollenation.—Next in importance to protection from frost comes the regular pollenation of the flowers, by drawing a rabbit's tail over them at noon on days when the pollen is dry. This method is usually practised with Peaches, Nectarines and Apricots, and will be found equally as effective with Cherries, Plums and Pears, the cross pollenation of each kind with their different varieties ensuring a better "set" of fruits. Especially is this necessary when cold easterly winds discourage the activities of bees and other insects, which, in their search for pollen and nectar, perform Nature's fertilising processes.

THE FLOWER GARDEN.

By J. G. WESTON, Gardener to the DUKE OF DEVONSHIRE, Chatsworth, Bakewell, Derbyshire.

Penzance Briars.—These hybrid Briars are great favourites with many, and as nearly all are vigorous growers they may be recommended for growing as a hedge or screen; they are seen at their best when allowed to grow practically unrestrained. Lord Penzance, Lady Penzance, Amy Robsart, Rose Bradwardine, Julia Mannering and Flora McIvor make a charming collection for this purpose.

Austrian Briars.—These are not grown so much as formerly, but they are very beautiful, and a corner should be found for them if possible. As they are not very strong growers, very little pruning will be required, the removal of the weaker shoots and very old wood being all that is necessary. Austrian Yellow, Austrian Copper, Harrisonii and Souvenir de Georges Pernet are very distinctive members of this section.

Rose Species.—Many of these are extremely interesting and striking when in bloom, and should undoubtedly be planted in gardens of sufficient size to allow them to be grown practically unrestrained. R. Moyesii is one of the very best, while other fine subjects are R. Fargesii, R. Hugonis, R. Willmottiae, R. sericea pteracantha, and R. rubrifolia—a good selection to plant in the wild garden.

Spring Bedding Plants.—Beds and borders, planted with spring-flowering bulbs, Wallflowers, Myosotis, Polyanthuses and plants of a similar nature, will be greatly improved by hoeing or lightly forking the soil when it is in a fairly dry condition, and before the plants are in full bloom. Spikes of Hyacinths should be neatly staked and tied so soon as necessary, for if neglected serious damage by wind may result. See that the ties are made fairly loose around the flower stem to allow for swelling; if they are tied too tightly the growing spikes may be snapped off. Where no carpeting plants are used with Hyacinths and other delicate flowers, sifted leaf-soil or Coconut-fibre refuse is often used as surfacing material to prevent the blooms being splashed during heavy rains.

Lawns.—Almost daily attention to lawns is necessary just now during suitable weather to ensure satisfactory results during the summer. If worms are troublesome, use one of the standard and well-tried forms of worm-killer supplied by any of the leading sundriesmen, to be used according to the directions given, for under no other conditions is it a fair test. Sweep and roll all turf constantly to secure a firm and smooth surface. If many weeds are present in the grass, a good dressing of lawn sand may be given now. All bare places should be made good, and all the edges cut clean with an edging tool; these small details are great factors in giving the garden a neat and well cared-for appearance.

Lawn-mowers.—These should be thoroughly overhauled and cleaned and made ready for use.

FOR NORTHERN GARDENERS.

By A. T. HARRISON, Gardener at Jordanhill Training Centre, Glasgow.

Perpetual Carnations.—Now that the days are longer and the sunlight more powerful, feeding of Perpetual Carnations may be carried out more regularly. A top-dressing of equal parts finely-sifted soil and a well-balanced Carnation manure should be applied to plants growing and flowering in pots, at the rate of a dessert spoonful to a six-inch pot; it should be spread carefully all over the surface, and watered in with a fine-rosed can. The beneficial results of this application will soon be apparent in the renewed vigour of the plants and the healthy glaucous tint of their foliage, which indicates robust health. Disbudding will also become more necessary, and should be attended to regularly.

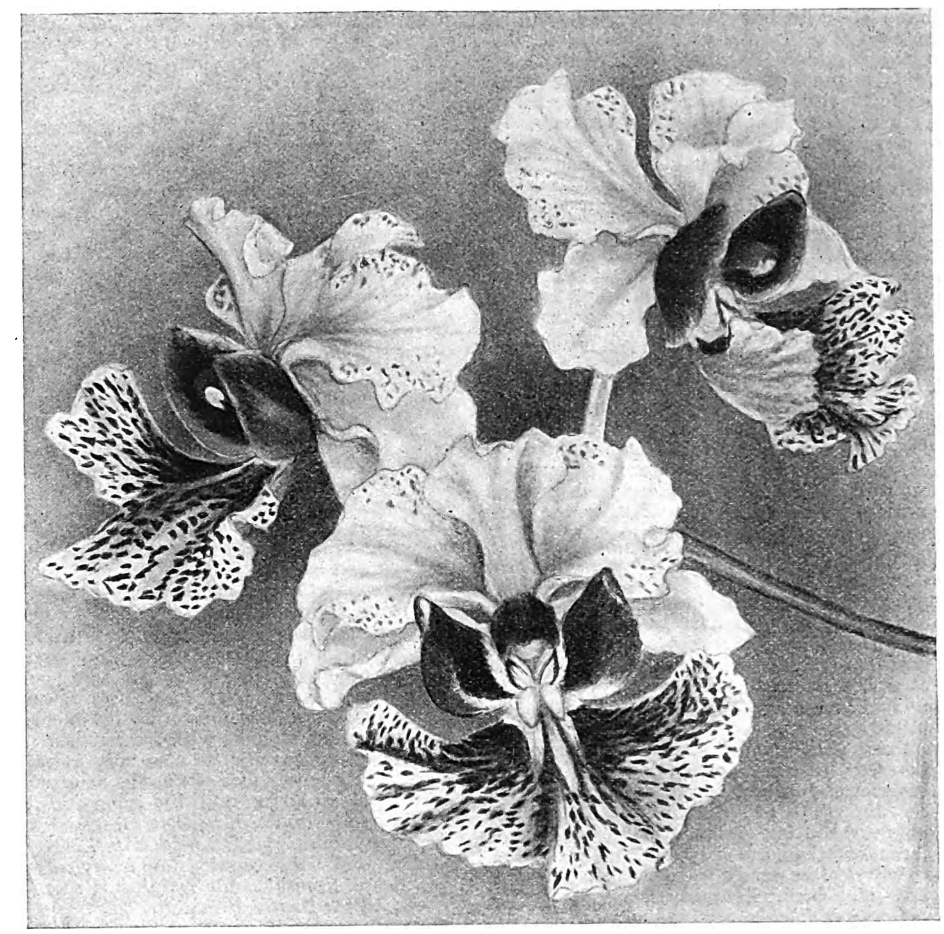


FIG. 93.—VANDA HOOKERIANA.

Sowing Vegetable Seeds.—Full sowings of seeds of many kinds of vegetables should now be made, and every opportunity may be taken, while the soil is in good order, to get them sown. Where large numbers of Brassicas are required for planting out in June, the seed-bed should be made in an early border, and sufficient drills may be drawn, a foot apart, to accommodate the various members of this large family, which should include early, mid-season and late Cabbages, Cauliflowers, Savoys, Brussels Sprouts, and Broccoli. Leek and Lettuce seeds, if sown now, will provide useful supplies for transplanting later, and will form a splendid succession to those from seeds sown earlier under glass. Peas for successional crops may now be sown more freely, and to ensure continuous supplies, sowings should be made at regular intervals. A very good rule is to sow seeds so soon as the previously sown ones have germinated, using early, second-early and late varieties in succession, and in this way keeping up the continuity of supply. Broad Beans, Parsnips, Spinach, etc., may also be sown as required, and a small sowing of early Carrot seeds should be tried in the early districts.

Spring Cabbages.—The severe weather has probably taken a heavy toll of those Cabbages which were planted in September, and where many blanks occur in the rows these should be made good from the reserved plants which were left in the seed-bed. The surface of the soil between the rows should be deeply stirred, either with a Dutch hoe or a fork, to aerate it, for it has probably become consolidated by the excessive rainfall earlier in the year. When growth is again active, and the first signs of hearting are apparent, a dressing of sulphate of ammonia, at the rate of two ounces to the square yard, should be applied, and lightly hoed in if dry weather ensues at the time, taking care to keep this stimulating manure clear of the foliage. Seedling Cabbages, etc., that were raised under glass should be pricked out, three or four inches apart, in any rough shelter; if the soil is good they will soon form useful plants for transplanting to permanent quarters later.

Strawberries.—If the planting of Strawberries was not completed last autumn, and the runners were left in nursery rows all the winter, the work may now be completed, provided the ground is in good working order. These spring-planted Strawberries should not be allowed to carry fruits this year, and so soon as the flower-spikes are noticed they should be removed, and the plants may be encouraged, by frequent hoeing and the removal of runners, to build up good crowns for next season.

FUCHSIAS.

These, at the present time, are a neglected group of plants, but there are indications that they will regain the popularity they enjoyed half-a-century ago. There is probably no plant that is easier to cultivate, and well-grown specimens give a continuation of bloom over a long period.

To the hybridist, no flowering plant offers wider opportunities, for the simple construction of the blooms and the abundance of pollen makes the work of cross-fertilisation an easy matter.

Where the amateur can devote the time to this interesting subject he will find that it is best to remove the stamens from the flowers that are intended to be used for seed-bearing before the sepals are open. These may be opened artificially, and after the stamens have been removed the flowers may be covered with a muslin bag to prevent fertilisation by natural means. The Fuchsia usually produces an abundance of seeds, and even where the trouble of making crosses has not been resorted to, there is a good chance of raising new forms from good varieties if bees are allowed free access to them, for these insects will visit them regularly. The same rules apply to raising seedlings of Fuchsias as to many other plants; one has to be prepared to raise and grow a great number before securing forms that are an advance on those already in commerce.

If seeds are required, it is advisable that the berries should be gathered when ripe; they should be crushed and the pulp washed away from the seeds, which should then be spread to dry, and stored until spring.

The ardent cultivator will, however, prefer to sow the seeds so soon as they are ripe. By selecting the earliest flowers for seed-bearing, ripe seeds may be secured early, and strong plants can be raised before the winter arrives. These may be kept growing slowly throughout the winter, to bloom early in the spring, when their merits will determine whether they are worth growing on during the summer.

Fortunately the Fuchsia is easily propagated from cuttings, for they are less subject to damping-off than are many other plants; the cuttings usually root freely in pots of pure sand, or in a mixture of sandy loam. For spring propagation it is essential that the stock plants are in active growth. When the new shoots are about two inches long, take them off and insert several in a five-inch pot of silver sand; if they are placed in a steady bottom-heat they will be rooted within a week or ten days. If cuttings can be rooted during autumn and kept growing all the winter, this will be found to be the most suitable method for producing large specimens. If these cuttings are wintered in three-inch pots they will be ready to move into those of five-inch size during February, larger pots being provided when they become necessary.

If Fuchsias are to be grown properly, well-rotted turf of a good texture, and well-decayed manure, are indispensable, and a mixture of equal parts good loam, leaf-soil and old cow manure, with sufficient sand to ensure porosity, will be found suitable. It is important, however, for the cultivator to bear in mind that the lighter the soil, the more rapid will be the growth of the plants; in a heavy, firm compost growth will be much slower and sturdier, a desirable condition if the plants are required for exhibition or decoration.

For the final potting a larger proportion of good loam, and less leaf-mould, should be used. At every stage of growth, Fuchsias require close attention to watering, and when the pots are full of roots liberal supplies will be required; at the same time, drainage must be perfect, for no good results can be obtained if the plants become waterlogged. Warm, moist air is eminently favourable to growth in the early part of the season, but as the plants come into bloom a drier atmosphere will be desirable and the use of the syringe should be discontinued, for the water so applied disfigures the foliage by spreading the pollen on the leaves. The Fuchsia is partial to shade, but the house should not be too heavily darkened; if sufficient water is supplied a certain amount of sunshine is by no means harmful, but the fierce glare of the sun and a dry heat should be avoided; such conditions are detrimental to their well-being, and shading during bright weather should be resorted to.

The stopping of the growths should be attended to regularly; the leader at every six or eight leaves, and the side-growths at every third or fourth pair, until the plant has been formed, when stopping may be discontinued and the plant allowed to flower.

Well-grown plants of Fuchsias make attractive beds, and they are much grown for this purpose in public parks, where such displays are appreciated by the public. For this purpose it is advisable to root the cuttings during autumn, potting them on into three-inch pots when rooted, and keeping them growing slowly throughout the winter, then potting them during the latter part of January or early February into five-inch or six-inch pots. From then until bedding-out time they will require constant attention with regard to watering and stopping, while it may also be necessary to move some of the stronger-growing kinds into larger pots, or to feed them as the pots become well-filled with roots.

There are many varieties in commerce that are suitable for the greenhouse or for bedding-out purposes. Some of the double forms are extremely attractive, and the best of them may be grown for both purposes, as may the more graceful, free-flowering, single kinds. Amongst the double-flowered forms, one of the most satisfactory varieties is Ballet Girl, that has coral-red sepals and large white corollas, and is well-known as a bedding plant. There is a form of this Fuchsia that is known as Rose Ballet Girl, the corolla of which is rose-coloured instead of white. David Alston has a white corolla shaded with rose, and carmine sepals, and is a fine variety for the greenhouse. Jeanne d'Arc is worth growing for its reflexed white sepals and violet-coloured corolla, while other good double forms are Phenomenal, with red sepals and dark purple corolla; Bella Forbes, Dainty Maid, Sylvia, and Elsie Vert, a free-flowering variety with a large, purple corolla and crimson sepals.

Single varieties are, as a rule, freer flowering, and some beautiful forms are still to be had for the greenhouse, amongst them being Scarcity and Mrs. Rundle, the latter having sepals of rosy-carmine with a deep carmine corolla. Masterpiece is a fine, free-flowering form; Favourite has a long tube with blush-coloured petals; while Clipper, with its reflexed sepals and rich claret corolla, is also very attractive. The old favourite, Rose of Castile, so often seen in cottage windows, and its improved form, should not be omitted, neither may such useful kinds as Countess of Aberdeen, H. Henkell, Jubilee and Killicrankie, for many of these varieties are suitable for bedding if room may be spared for them.

A variety that is well grown in the north for this purpose is named Dunrobin Bedder, for it is a most profuse bloomer, having bright coral-red flowers. It is fairly hardy, and even if left in the ground all the winter, the root-stock will survive and send up vigorous young shoots during the following spring.

Three Fuchsias with coloured foliage are Golden Treasure, Sunray and the one known as F. gracilis variegata. Golden Treasure is a free-flowering, erect-growing plant with golden-yellow foliage, and flowers consisting of a violet corolla and scarlet sepals. Sunray has foliage of a charming combination of crimson-bronze and white, and is a delightful bedding plant, while F. gracilis variegata is, as its names imply, a light, graceful form with variegated foliage which can be usefully employed to impart a graceful effect to beds containing plants of a more formal charcater.

The term Hardy Fuchsia is applied to a group that is found to withstand the winters in the milder parts of the country. Even in many of the colder localities the root-stocks will live through an average winter, and vigorous young growths will be produced freely from the old stools, and will attain a height of four feet to five feet before the end of the season.

Grown in this way, they make a most attractive feature in the flower garden or shrubbery, either as groups or in the form of a hedge.

In south-west Scotland, where the weather is mild and humid, it is a joy to see F. Riccartoni growing rampantly. In a sheltered glade leading from Logan House to the stormy shores of the Irish Channel, where so many tender plants are grown successfully in the open, this Fuchsia grows into miniature trees and is a wonderful sight when covered with thousands of its drooping, red flowers, borne on slender, red stalks. Incidentally, it may be of interest to note that the honey bees visit these flowers in large numbers, and where many plants are grown a good supply of honey is stored during the time that they are in bloom, if good weather prevails.

Although it is only in such favoured districts that we are privileged to see the full beauty of this plant, it is nevertheless worthy of a place in all gardens, for the stools will come safely through the majority of winters, if the precaution is taken to cover them with a little brushwood or dry Bracken during severe frosts. The same treatment should be applied to all so-called hardy varieties, as they are natives of Mexico, New Zealand and South America.

F. corallina, a free-growing variety sometimes grown under the name of F. exoniensis, will attain the height of fifteen to twenty feet in favoured districts, and will produce numerous, coral-red flowers.

F. globosa is a compact grower with globular, purple-violet-red flowers, while it is recorded as being a parent plant of F. Riccartoni. F. macrostemma, a strong-stemmed species from Chile, has a scarlet calyx and spreading, purple petals, and F. m. gracilis, although a native of Mexico, does well in the open here with only a slight protection during winter.

To those who admire the dwarfer and more compact forms, F. m. pumila may be recommended. It has flowers similar in appearance to those of F. m. gracilis, but the plants are much more compact in form. *R. F., Wisley.*

PLANTING A LARGE GROUP OF FLOWER BEDS.

It may interest many readers to know how a large group of flower beds was filled with bedding plants to give a display at a given date. It is not often that so large an array of beds is now found, but when such a group is well filled, it provides a great deal of pleasure. A plan of the beds is given (Fig. 94), and I may state that the beds illustrate a design which added greatly to the floral beauty of Hardwick House, Bury St. Edmunds. Doubtless there are still many gardeners who received part of their training in these well-known gardens, and who will recognise the design, and remember how the planting was done when there were more conveniences than there are now in regard to labour and glass accommodation. The plan of arrangement under discussion was one I had the pleasure of carrying out during 1926, and although I was not able to fill the beds exactly as I would have liked, the result was greatly admired, and where criticism was given it was in the friendliest manner. I am not describing my plan as the best possible arrangement, but feel that I would like to put on record the manner of the bedding because, alas! the whole area is now practically a wilderness.

I have numbered the beds to facilitate reference. I do not think that the design is original for I have a recollection of seeing a similar design illustrated in a garden book many years ago, but cannot say where. During my stay at these gardens I was not able to find out when the beds were made, but it must have been more than fifty years ago.

The central feature of this Italian Garden was a fountain which is denoted by O, and there were many ornamental Yews which I have not indicated in the plan, as well as a terrace wall furnished with many flower vases, which were, during my stay, filled alternately with Pelargonium Paul Crampel, and the Ivy-leaved Pelargonium Madame Crousse, and aided by suitable weather they gave a remarkably good display.

The four corner beds, 1, 4, 29 and 32, were filled with ten clumps of Sweet Peas, a groundwork of Antirrhinums, and an edging of Nepeta Mussinii. The edging to these beds, as well as to most of the others, was composed of a double row of plants, as the beds were large and it was in some cases necessary to widen the edging in order to reserve sufficient plants for the main part of the display. The beds 2 and 3, as well as 30 and 31, were filled with double Dahlias, edged with Calendula. The first two had red Dahlias edged with Calendula Lemon Queen, and the other two, white Dahlias edged with Calendula Orange King. The four circular beds, 5, 6, 27 and 28, were filled with scarlet Pelargoniums, with an outer row of yellow Calceolaria and an edging of Cerastium tomentosum. Two were filled with Pelargonium Paul Crampel, and owing to an insufficiency of these the other two were provided with Pelargonium Henri Jacoby, which is inferior in many ways to Paul Crampel. Although many of these Pelargoniums had to be propagated in the spring they gave a rich display. The row of Calceolaria was used to enable me to set a limited stock of Pelargoniums sufficiently close together to make sure of a full display. But I think that these rings of yellow added to the general effect.

The four beds, 7, 10, 23 and 26, were Rose beds, but were planted with new stock and newer varieties. The size of the beds may be gauged by the fact that more than six hundred Roses were planted in them at approximately two feet apart. Two of these beds were edged with Nepeta, and the other two with Cerastium tomentosum. Most of the Roses flowered well during the first year, the Hardwick soil evidently suiting them. Certainly they grew and flowered better than I had expected for, wanting some colour in these beds for the summer, and not having a sufficient number of Violas for the purpose, I yielded to the temptation to plant spring-rooted plants of Nepeta midway between the Roses; so well did this Nepeta grow that although placed two feet apart, I had to clip it with shears to keep it from the Roses. The insets in these beds represent large flower vases standing on high pedicels.

The beds 8 and 9 were filled with Heliotrope Lord Roberts as a ground-work, with tall plants of pink Ivy-leafed Pelargoniums at four feet apart, and an edging of dwarf rose-coloured Tropaeolums. I had intended to use an edging of Dimorphotheca aurantiaca, and sowed the seeds for the purpose, but, unfortunately, there was such a poor germination that I had to choose an alternative and obviously at so late a date there was a narrow choice, so I decided on dwarf "Nasturtiums." These flowered well, and their bright colour relieved the sombreness of the Heliotrope, but they were too easily driven about by the wind to afford a neat edging. In the corresponding beds on the other part of the design, 24 and 25, the space was filled with spring-rooted, pink Ivy-leaved Pelargonium Madame Crousse as a groundwork, some tall plants of the same variety set out four feet apart, and a double edging of blue Ageratum. These were two of the prettiest beds of the whole set and lasted well.

The four beds clustering close to the fountain were filled with East Lothian Stocks, pink and white (two of each colour), relieved with Salpiglossis and edged with blue Lobelia. Four of the shield-shaped beds, 11, 12, 21 and 22, were filled with Antirrhinums and edged with Violas. Here I have a tale to tell of a rash but successful experiment. When reviewing my stock in April I had occasion to revise my original plan of furnishing, and in doing so found that I had insufficient plants of Antirrhinums. It was then late for sowing again, and as I had some forward plants from a January sowing, I snipped the tops out of a few of these and inserted them in sand, in a propagator. In a week or ten days' time I found that these tops—which were snipped off with a pair of scissors and were internodal cuttings—had rooted well, so I at once took the tops from all the other plants and rooted practically every one, so that I was able to obtain sufficient plants to fill the four beds. Although the younger plants were a little later than the others in starting to flower, when all were in bloom it was impossible to distinguish between those raised from cuttings and those from seeds. I have not heard of anyone adopting this method of propagation with Antirrhinums in the spring, but I shall never hesitate to use it again, if the necessity arises.

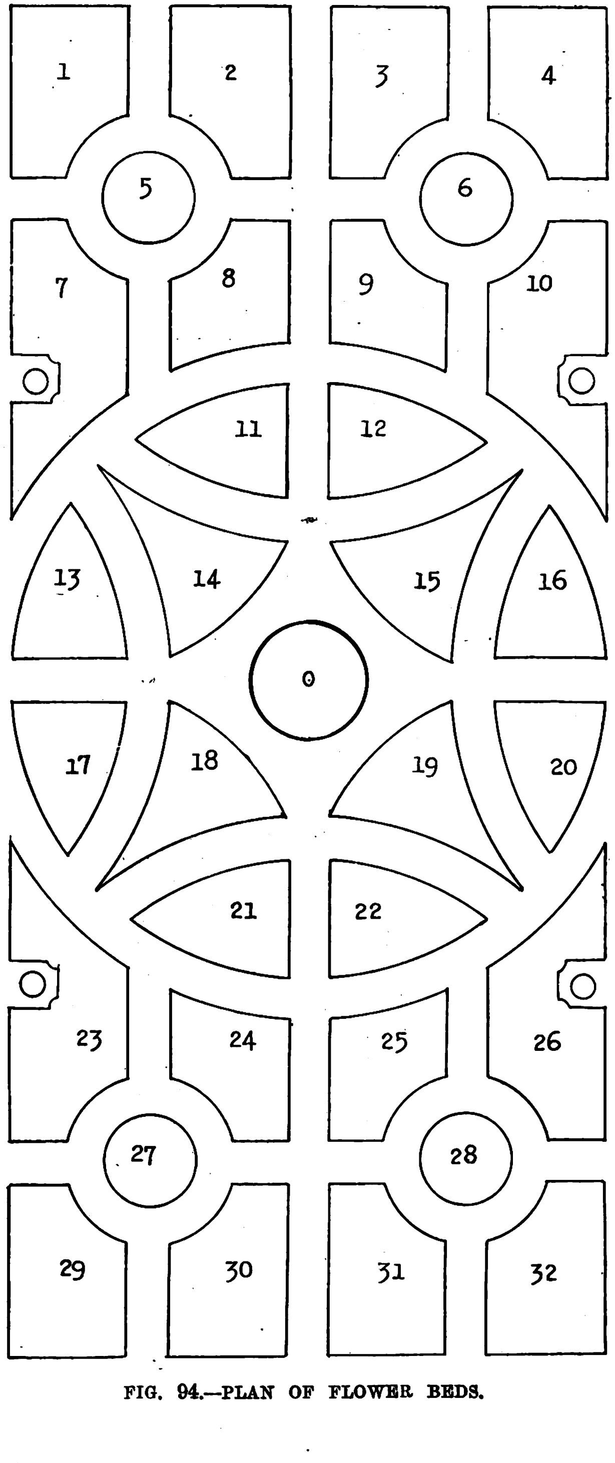


FIG. 94.—PLAN OF FLOWER BEDS.

The beds 16 and 20 were planted with Nepeta placed two feet apart, and midway between these plants I used Begonia Crimson Bedder. To these beds was given an edging of yellow Calceolaria, and I found the combination a rich one, although the Begonias, when they had assumed a beautiful colour in their foliage, did not then grow as I should have liked. To some extent I ascribed this to the fact that they were raised from cuttings instead of from seeds. Although the growth was not good I shall certainly, at the first opportunity, try this combination again.

The two remaining beds, 13 and 17, proved, late in the season, to be the most successful of all, although they caused some mild criticism. The main part of each bed was planted with Cineraria maritima, and dotted among these at two-and-a-half feet apart were plants of Verbena venosa, which had been prepared in seven-inch pots. To this bed I gave a double edging of Dell's Crimson Beet, and this, I think, evoked the criticism. Verbena venosa grew remarkably well so that the flowers of the adjoining plants almost met, and certainly these beds looked well long after the beauty had departed from the others.

All the beds were laid out on grass, and it was the wish of the owner to have them look their best on August Bank Holiday. *William F. Rowles.*

INDOOR PLANTS.

LAPAGERIAS.

THERE are few more beautiful climbers for a conservatory or corridor with a north aspect than a white or red Lapageria; indeed, if there is room for them, the two may be planted side by side with increased effect. They will also grow splendidly in any ordinary greenhouse, provided the portion of roof allotted to them is shaded during bright sunshine. This love of shade is not surprising, for the Lapageria is found straggling over the undergrowth of Chilean forests. It may be planted on north and north-west walls in the more favoured parts of Great Britain, and succeeds admirably. Although nearly hardy, continued low temperature will sometimes cause a considerable leaf fall, and some protection is therefore desirable in case of severe frost.

Under glass, Lapagerias may be grown in pots, but they succeed best when planted out. Good drainage is essential, and is more easily secured when the border is above the floor level; in fact, it may be of the same height as the staging and built around with bricks. The surface of the soil is then immediately under the eye, and protection of the new growths from slugs may be given so soon as needed, by placing a piece of cotton-wool around the shoot; even then, the small, black slugs must be trapped or they will eat the Asparagus-like growth, ere it appears above the ground.

Many growers recommend a compost of fibrous peat and sand, but this material does not remain sweet in a border. Good, light, turfy loam, with one-third of hard peat from a heath, and plenty of grit, sand or small charcoal to keep it open, is generally a successful rooting-medium.

Lapagerias may be rooted from cuttings, but are usually propagated by layering. I well remember the layering beds in the old Veitchian nurseries; long growths, made the previous year from older wood, were taken down from the roof and embedded in sand, with only the leaves showing above it; roots and young stems were formed at each joint. At the present time, large plants appear scarce in the trade, and if those received are small, they may require to be grown on for a year or two in pots before planting them out. Repot them so soon as the roots encircle the soil. Lapagerias love fresh, sweet soil to root in. Fumigate occasionally to destroy aphis, and spray with nicotine soap to keep scale insects in check; a free use of the syringe on warm afternoons is of great benefit to the foliage.

Some readers may have an old tangled plant to straighten out. It looks a difficult problem, but is really quite an easy matter. Coil the shoots in rings about fifteen inches in diameter, and tie them up with raffia so far as the growths are free. One may meet with five or six twisted up like a cable, or one that has coiled itself around an iron support or wire; but the stems are wiry and it is an easy matter to untwist them. When the junction of the branches is reached the coils are tied together, and so on to the base. This method admits of quick replacement without injury, and is adaptable to any creeper of a flexible nature.

Pruning should be done annually when flowering is over, and consists of removing all very old, exhausted wood, thinning the weakest so that the wires—spaced at about fifteen inches apart—are furnished with four or five growths each for their entire length. When growth commences in spring, strain two or more strands of twine between the wires, and twist the soft, new growths around them. Many growths are comparatively short, often only twelve or eighteen inches long; when these are about to flower they may be released by cutting and drawing out the twine and allowed to hang gracefully, and exhibit their flowers to the greatest advantage.

Lapageria rosea was introduced in 1847. Two other varieties beside the type are now listed, L. rosea superba—can this be the "Nash Court" variety famed of old?—and the pure white L. rosea var. alba; for some reason this has withstood the winter's cold on the open walls better than the red variety. *J. Comber, Nymans Gardens.*

HARDY FLOWER BORDER.

DIANTHUS IPSWICH CRIMSON.

GARDEN lovers who are seeking a showy plant for early borders to produce an early summer display, will find the beautiful Dianthus Ipswich Crimson most suitable.

This fine introduction belongs to the D. plumarius section; it is very hardy, free in growth, and exceptionally free-blooming, the plants usually being covered with blooms for nearly two months.

The flowers are of a beautiful dark crimson colour. If it is given a prominent position on large rockeries this Pink will give an extremely pleasing effect, while it will be found to flourish in ordinary garden soil. *G. L.*

DAY-BLOOMING EVENING PRIMROSES.

THE genus Oenothera contains many deeply interesting plants which only open their flowers in the late afternoon or evening, but delightful as some of these are, they are of little value in the border where a good display of flowers is expected during the day, and preference may be given to the day-blooming species, which are of considerable beauty.

Their bright yellow flowers, produced with great freedom for a considerable length of time, are very effective. They are of easy culture, and increase rapidly under congenial conditions. There are not many species of this type available, and it may be said that the specific distinctions between them are not too apparent to the observer; to some it would appear that O. fruticosa may well claim the other so-called species as varieties.

This plant, as generally grown, is about two feet high, and has finely-tinted foliage and many brownish buds which open into bright yellow flowers. There is a semi-double variety called Youngii, but this has the defect that it is difficult to stake, as its flowers are too heavy for the weak stems, and it has been superseded by the variety Michael Cuthbertson.

O. Fraseri, or O. fruticosa Fraseri as some would term it, is a dwarfer and neater plant, and the lower leaves are spotted. I prefer it to what we know as the typical O. fruticosa. From a batch of seedlings of this plant, Mr. Michael Cuthbertson selected a good double variety, which received the name of the raiser and is the plant previously referred to as Michael Cuthbertson.

I have experienced no difficulty in growing any of these Evening Primroses in various soils, except that if they are grown in a dry sandy one, with a subsoil of gravel and sand, I have found it necessary to give the plants an occasional soaking of water in times of severe drought. In ordinary garden loam, however this should not be necessary. With the exception of the double varieties, of which Michael Cuthbertson is by far the best, these Oenotheras may be raised from seeds and all may be multiplied by division. I prefer planting them in sunny situations, as when they are in bloom the glowing effect of the open flowers is much finer. *S. Arnott.*

ALPINE GARDEN.

THE PRICKLY THRIFTS.

As a race, the Acantholimons, or Prickly Thrifts, are both interesting and attractive, but although there are a large number that are known to botanists, very few of them are in commerce. They are exceedingly spiny, probably as a defence against browsing animals, and some of the species that are not in cultivation are quite minute. As a whole, they require much the same treatment, for they all love hot, sunny positions, and dry, well-drained soil containing lime, small stones and grit. Even with such conditions, Acantholimon glumaceum and A. venustum have a mysterious habit of dying off without apparent cause. The centre of a large plant generally begins to become bare, and the beauty of the plant is destroyed even before it finally succumbs. Happily, Acantholimon glumaceum, which is the best known species, is easily propagated: it can be raised from seeds or it may be increased by fixing down some of the branches in the soil, where they will root and can be removed when this process has been successful. The other species, A. venustum, is most easily raised from seeds.

A. glumaceum forms, in time, large, rather loose cushions or mounds of green, spiny leaves, and above these are borne, practically throughout the summer, flowers of a pleasing pink, that are arranged in rather Thrift-like heads just above the foliage. It is widely known in British gardens, for it is by no means difficult to accommodate. It comes from the slopes and cliffs of Ararat and the adjoining regions.

A. venustum is coveted because of its rarity, although it is gradually becoming more common. It comes from the Cilician Taurus, and forms masses of rather broad, blue-grey leaves, which are marked with lime. The flowers, which are produced in loose sprays, are larger than those of A. glumaceum, and are of a charming rose-pink or purple shade. Its blue-grey foliage and large flowers cause it to be appreciated wherever it is grown and flowered, and it requires the same treatment as A. glumaceum.

SAXIFRAGA BORISII.

SAXIFRAGES of the Kabschia section are in abundance, and a study of catalogues by intending purchasers has generally the effect of confusing them and leading them almost to despair of making a satisfactory selection of the many beautiful subjects which present themselves for their acquisition. There are some, however, which are so charming, and so well-proved, that we cannot well disregard them, and of such is S. Borisii, which is of hybrid origin, and which claims as its parents two species of high beauty in themselves, which beauty they have handed down to their progeny.

It is an exquisite little alpine plant, and ranks high in that choice race to which it belongs.

In appearance, it partakes of both parents, the colour tone, a blue-grey, partaking of that of S. Ferdinandi-Coburgi, but the habit of growth more nearly resembles that of S. marginata. The foliage is more spreading and mat-like, and the leaves are not so sharply pointed.

The flowers, borne in clusters on stems three inches or four inches high, are rather star-shaped, and they are of a lovely shade of citron-yellow, their beauty being enhanced by the pinkish tint and red hairs of the stems. Saxifraga Borisii is, in effect, one of the Saxifrage grower's chief treasures, for although it is so beautiful it is as easy to grow as any ordinary Kabschia.

It likes a soil consisting of about one-half of loam, one-quarter of sand, and one-quarter of leaf-mould or peat, with some lime added, and a situation open to the sun, but not too exposed to it. *S. Arnott.*

AETHIONEMA PULCHELLUM.

THE Aethionemas, as a family, rank among the most beautiful groups of alpine plants, and of them A. pulchellum (Fig. 92, p. 185) is undoubtedly one of the best. This species has been, and is, often confused with A. coridifolium, and sometimes with A. grandiflorum, from both of which species it differs in that the main growths, arising from the base of the plant, are branched into numerous smaller shoots.

A. pulchellum is of such habit as to make it an ideal subject for planting on sunny ledges or in crevices of cliffs, while it is also a fine plant for growing on dry rock walls; the growths are both erect and semi-prostrate, producing a moderately compact bushy effect. The rose-coloured flowers are borne in terminal clusters at the ends of the leafy shoots during June and July, so profusely that the plants become mounds of colour.

This Aethionema, together with the other perennial members of the genus, will flourish in well-drained, light, rich soil, to which lime may be added; it is a free grower, and is easily increased either by cuttings or from seeds. *F.*

TREES AND SHRUBS.

A BEAUTIFUL WILLOW.

The Willow grown at Kew under the name of Salix cinerea variety Medemii is one of the most beautiful of its tribe, and is admirable adapted for planting in moist situations or by the waterside, where a small tree or large shrub is required.

The bright golden-yellow male catkins are amongst the largest of those produced by any Willow, and they possess the additional advantage of being at their best very early in the year, usually by the end of January or the first week in February.

By judicious pruning when it is young, Salix cinerea Medemii may be induced to form a single-stemmed tree with a symmetrical bushy head; or if so desired, it may be grown as a shapely bush.

From November to January is a suitable time to make and insert cuttings of this shrub; they root easily if inserted in a moist position, but the young plants do not transplant well, and they should be moved to their permanent positions before they are two years old. If suitable protection can be afforded the cuttings, which may be from one foot to eighteen inches in length, it is advisable to insert them in their permanent situations at once, thus obviating the necessity for transplanting. *T. H. Everett.*

DAPHNE ODORA.

This beautiful, sweetly-scented and free-flowering Daphne, which is generally grown in cool greenhouses, is a plant worthy of extended cultivation, and I would suggest that it might be tried in the open in favoured localities, for I have proved its adaptability to such conditions.

Here we grow it on walls facing south with great success; at the present time its evergreen shoots are packed with flower buds, some of which are already commencing to open, and will do so in quantity until the end of April. The flowers, which are of a pinkish or purplish-white, are delightfully fragrant, and if cut will last in water for a long time.

Daphne odora, which is strictly evergreen, is easily propagated either by layering or by inserting cuttings in very gentle heat, and the young plants grow very freely when planted out in loam and leaf-mould, in a sheltered and well-drained border against a warm wall. Plants which we propagated from cuttings four years ago are now fine specimens.

They have at times experienced 20° of frost, and with only a temporary shelter of tiffany or a few evergreen boughs placed in front of them have survived, and I am convinced that plants would succeed in similar localities. *R. H. C., Horsley Hall Gardens, North Wales.*

ILEX LATIFOLIA.

The large genus Ilex is represented by many species of variable character; some are deciduous, but the majority of them are evergreen.

Ilex latifolia is a handsome evergreen tree from Japan, with thick, leathery, dark green leaves, from four inches to six inches in length. They are slightly toothed, but not spiny like other members of this family. The fruit is red, and is borne fairly freely, but the main value of the tree lies in its large, handsome foliage. It is evidently moderately hardy, for a specimen here has now attained the approximate height of twenty feet. This was planted by the late Mr. G. F. Wilson, near the entrance to his wild garden.

In favoured situations this Holly might well be given a place, for it is by no means common.

PRUNUS ILICIFOLIA.

This evergreen Prunus may only be grown in the open garden in favoured districts, but it might well be tried against a warm wall in gardens where uncommon shrubs are appreciated.

It is a native of California and is an attractive subject for growing in a cool conservatory or glass corridor.

The foliage is dark green and glossy, and the flowers are borne in racemes from one to two inches in length from the axils of the leaves during summer. A small specimen of Prunus ilicifolia has been growing in a sheltered spot near the base of the rock garden at Wisley for many years, and has survived the winters with only slight protection during periods of severe frosts. *R. F., Wisley.*

DAPHNE CNEORUM.

The Daphnes are noted for their beauty of form and sweetly-scented flowers, but none can excel in exquisite beauty and delicious fragrance this charming denizen of our rock gardens. A prostrate, trailing, evergreen shrub, it is not always met with in a flourishing condition, but when it is seen in perfection it is one of the brightest gems amongst our hardy, spring-flowering plants. The reddish-pink flowers of Daphne Cneorum are borne in terminal, flattened heads, closely surrounded by linear-lanceolate leaves, and are produced with remarkable freedom in April and May, while under favourable conditions, a few blossoms may appear in late summer.

Most of the Daphnes are moisture-loving plants, and the best results are obtained from this species when it is planted in a well-worked, moist soil which ensures a cool rooting medium. *A. P. C.*

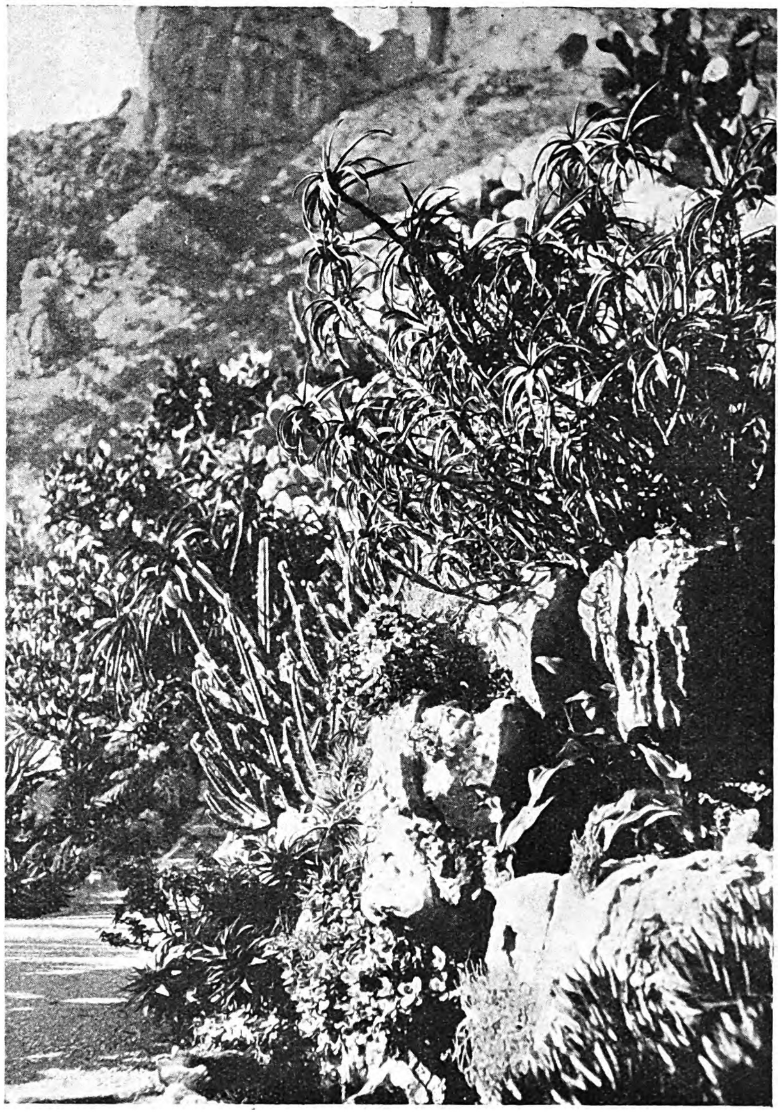


FIG. 95.—JARDIN EXOTIQUE: ALOE MITRIFORMIS (RIGHT), OTHER ALOES AND CEREUS SPP. (see p. 192).

ERICA AUSTRALIS.

Those who live in favoured districts should certainly add this Heath to their collection. It is a native of Spain and Portugal, and in this country grows eventually to a height of eight or nine feet; in its prime it is a well-furnished bush, but it is inclined to be rather leggy in the earlier and later stages. The flower buds, borne at the ends of the branchlets, are bright rose, the expanded flowers being rosy-purple, while the flowering season extends from March to June.

I have never heard of its successful cultivation in soils containing lime; sandy, peaty soils are the most suitable, but not a necessity, for it will succeed in a well-drained loam that has been dug and forked and enriched with a mixture of leaf-mould and sand at planting time. This Heath is usually supplied in pots, and as it needs extra care in propagation, it is slightly more expensive than the commoner kinds.

Planting may be accomplished from the middle of March to the end of April. Four or five feet each way should be allowed between each plant, while dwarf Heaths may be planted between them to cover the ground for a few years. Stake them securely and provide a water-hole around the stems. Mulch the soil with Bracken or leaf-mould during the summer, and shorten the leading shoots to make them bushy. For the first few winters it is wise to afford some slight protection by placing hurdles, consisting of stakes interwoven with Laurel-boughs, on the north-east side of the group; a little care of this kind is well repaid by the great beauty of the plants during spring and early summer.

The specimens in this garden are now about twenty-five years of age, and during this season we are planting carefully prepared specimens of the beautiful white variety Mr. Robert, that was found in Portugal by, and named in commemoration of, the late son of Mr. J. C. Williams, of Caerhays Castle. It grows strongly in pots, and judging from the branches that I have seen taken from bushes in the open, it grows so strongly as the type, which it resembles in every way except that the flowers are pure white. *J. Comber, Nymans Gardens.*

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MONACO'S JARDIN EXOTIQUE.

FOR visitors to Monte Carlo there are few more delightful ways of spending a morning than a stroll through the famous Jardin Exotique of the Prince of Monaco, now open to the public, and easily accessible by the Moyenne Corniche Road.

After the hectic atmosphere of the life which centres around the Casino and the tawdry sophistication of Monte Carlo and its floating population of cosmopolitan pleasure-seekers, the Jardin Exotique delights and surprises by its savage, uncompromising beauty. Here are no parterres of symmetrical design, no geometrical conceits, no pollarded trees or fantastically "shingled" shrubs, no beds of Cinerarias or Primulas, forced by excessive feeding into fatty degeneration of florescence; but rocky cliffs rising sheer above the sea, where, among giant boulders, sun-scorched rocks and golden sands, an unerring taste has achieved effects as strangely beautiful as any in the famous gardens of Europe.

The Jardin Exotique, which owes its origin to the late Prince of Monaco, was begun some twenty years ago, and from modest beginnings has since been greatly enlarged and extended, by cutting narrow paths on the face of the cliff and blasting away the rocks of the hillside. Exposed to the full force of the midday sun, in the rocky, well-drained soil they love, denizens of South Africa and the New World increase and multiply as in their native Cape, Arizona, Mexico or Peru.

At no season of the year is the garden without its special beauty and interest. Probably there is never a day when some kind of Aloe, Yucca, Mesembryanthemum, Crassula or Stapelia cannot be seen in flower; but apart from the beauty of the flowers, the endless variety of form and the multiple disposition of the spines on the fantastic growths—a device of nature to protect these plants of the waterless regions of the world from animals craving for the liquid they store up—is in itself an endless study.

The great flowering period of the Cacti is roughly from May to September, when the three important families of Opuntia, Cereus and Echinocactus rival each other in dazzling displays of scarlet, saffron, magenta, orange and rose. Only blue is absent from the palette, a colour never found in Cacti or Succulents—an illustration of the almost universal rule that the three primary colours—taking Salvia splendens, Gentiana bavarica and Ranunculus bulbosus as examples of them—are never found in the same genus.

During the autumn months fruits of Opuntia and especially of giant Cereus delight the eye. The latter are deceptively inviting; for, instead of being full of luscious flesh, as the rosy, Apple-like exterior suggests, investigation only reveals a mass of white fluff and minute black seeds.

Throughout the winter months strident Aloes burst into flame in every tone of yellow and red, while their more discreet cousins, the Gasterias, with their delicately-tinted bells of jade green and pale coral, delight a more fastidious taste.

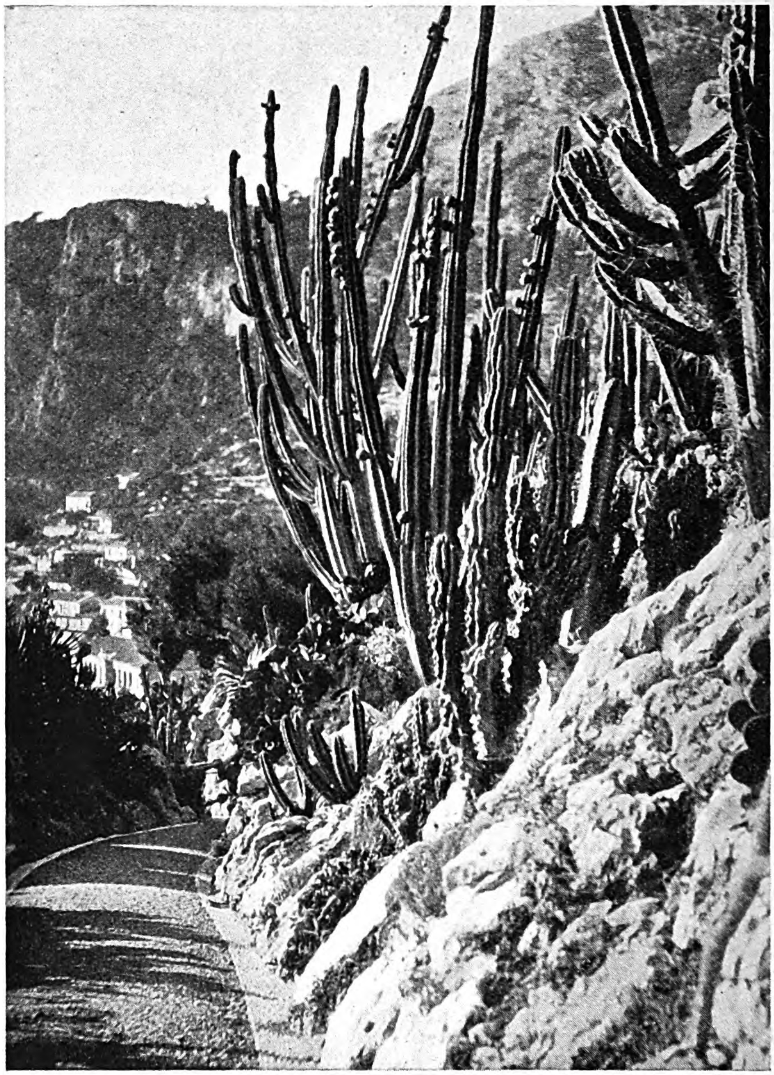


FIG. 96.—JARDIN EXOTIQUE: CEREUS (PROBABLY C. FORBESII) IN FRUIT.

The two exquisite families of Epiphyllum and Phyllocactus are hardly represented, and do not prosper here. Being natives of tropical forests and often epiphytic on forest trees, some shade and atmospheric moisture are necessary to their well-being, although, like every member of the Cactus family, they cannot tolerate stagnant moisture, and sharp drainage is essential for keeping them in health in cultivation. For the same reason few Rhipsalis could be successfully grown in the Jardin Exotique.

In a garden where everything is of interest it is difficult to single out individual plants for special mention. An Aloe with scarlet leaves, said to come from the Cameroons, still unlabelled, has a strangely sinister appearance, even in a garden where the monster is the normal. From the blood-soaked soil of what immemorial "Jardin des Supplices" did it spring to life with flowers as scarlet as its refulgent, saw-edged leaves? Aloe mitriformis, a clear olive-green, each leaf shaped like a Bishop's mitre, deserves a close examination. Opuntia tunicata (most difficult of all Cacti to handle), with silvery spines, which fasten into the flesh like fish-hooks of malignant intention; Cereus (Pilocereus) senilis, its mop of silver fibre suggesting the doyen of the garden; giant Euphorbiae, indistinguishable from a Cereus when not in flower, except by the milky sap by which all members of this family may be easily recognised; the familiar Euphorbia splendens (Christ's Crown) seldom without a few of its lovely little, blood-red, star-like flowers; Agave Victoriae-Reginae; Echinocactus Grusonii, like gigantic footstools, with chestnut-coloured spines at the apex of the plant, which subsequently turn a pale yellow shade; Mesembryanthemums of every habit, with yellow, silvery-white and magenta flowers; and stem-rooting Cereus, lying across the face of the rocks, like fat green serpents basking in the sun—these are only a few of the wonders of this unique garden, some views of which are given in Figs. 95, 96, 97, 98, 99 and 100.

A catalogue of the treasures of the Jardin Exotique would not only fill many pages, but would also be difficult to give with any accuracy, owing to the many changes recently made in the nomenclature of the whole Cactus family.

Up to the present the naming and labelling of the collection has been the only unsatisfactory feature of the Prince of Monaco's unique garden.

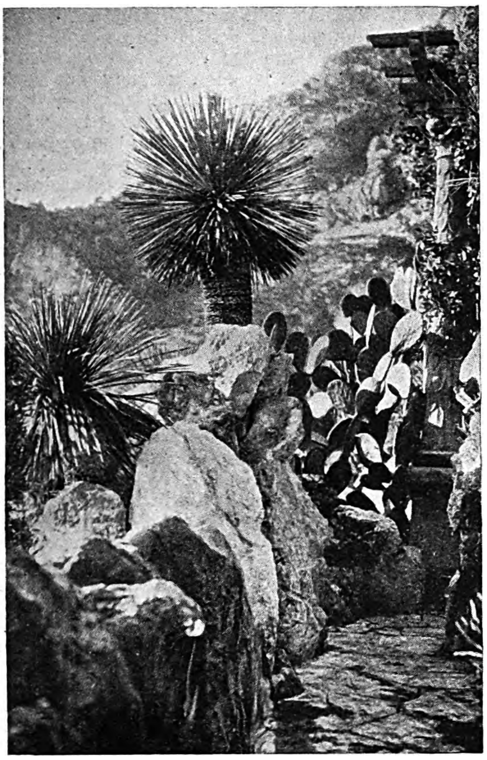


FIG. 97.—JARDIN EXOTIQUE: DASYLIRION, AND OPUNTIA FICUS-INDICA IN FRUIT.

But recently an expert has been called in, to whom will be entrusted the task of correctly labelling the whole collection after Britten and Rose's monumental work, lately published by the Carnegie Institute, and now accepted as the standard work on the genus. When this task has been completed, the only ground for criticism will have been removed, and a further pleasure added to the joys of a visit to Monaco's Jardin Exotique. *Christopher Sandeman.*

FIG.—98.—JARDIN EXOTIQUE: ECHINOCACTUS GRUSONII, AND SPECIES OF ALOE AND CEREUS.

THE RÔLE OF MYCORRHIZA IN PLANT GROWTH.

(*Continued from p.* 174.)

THE student of mycorrhiza quickly becomes aware of its wide distribution among vascular plants. It occurs in Ferns and Club Mosses, is general in Conifers, and appears among flowering plants in a great number of species from the most varied habitats and of the most diverse affinities. Certain families seem to escape infection, *e.g.*, Cruciferae. Whether such immunity is absolute may, perhaps, be doubted in view of the recent addition of plants formerly believed to be free from mycorrhiza, *e.g.*, the common Male Fern and members of the grass family, to the ever-growing list of species possessing it.

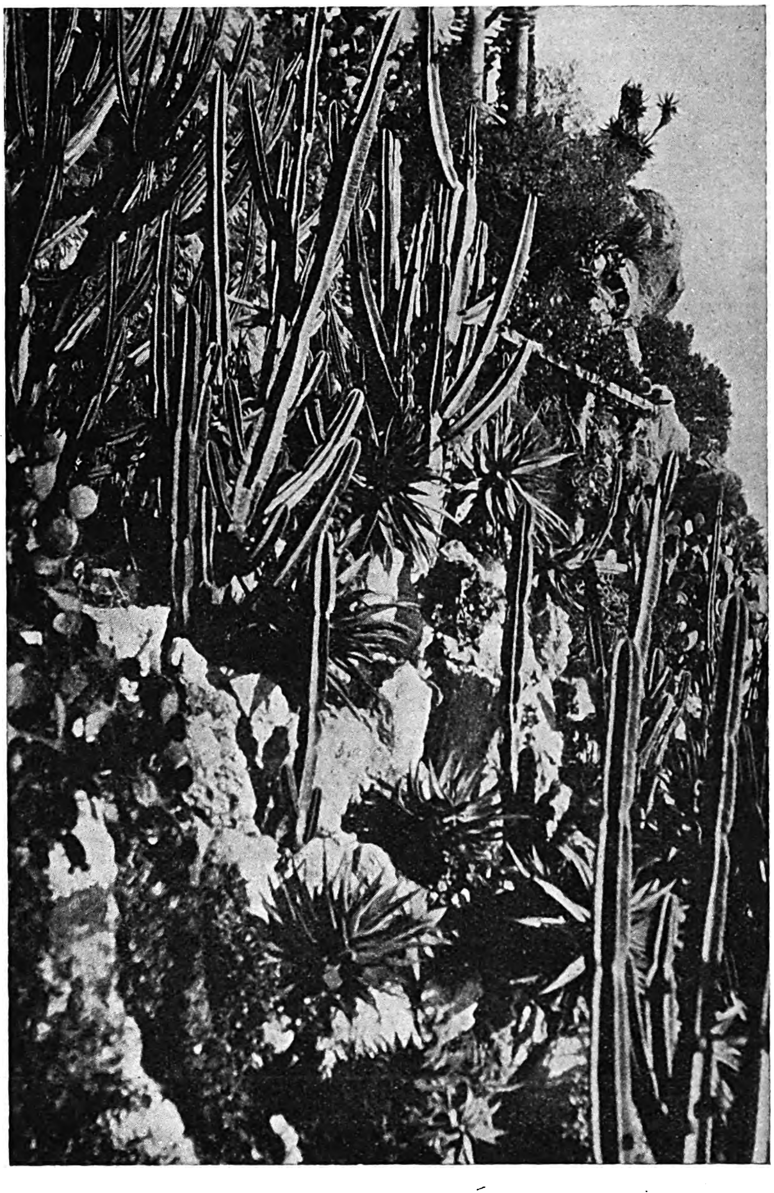


FIG. 99.—JARDIN EXOTIQUE: EUPHORBIA ABYSSINICA, CEREUS SP. AND ALOES.

A few groups show a uniform condition suggesting greater specialisation, and of these some have been intensively studied, *e.g.*, Orchids, Heaths, and some Conifers and deciduous trees. Others will possibly fall into the same category when more closely investigated, *e.g.*, certain families allied to Ericaceae, Gentianaceae and Polygalaceae.

Laboratory studies of mycorrhiza have pointed the way to a new and fascinating field of research, and throw new light upon what may be called the bionomics of the relationship. Most of the evidence bearing on this has been derived from the special researches just mentioned. Before reviewing it, we may glance at what is known of mycorrhiza as it appears in a majority of herbaceous plants.

The first and most striking fact is the extraordinary uniformity in respect to the mycelium present in the tissues of many of these. Ferns, Club Mosses and a very large number of herbaceous perennials, tropical and temperate, wild and cultivated, agree in showing regular infection by mycelium so uniform in type that there can be little doubt it belongs to either the same fungus species or to forms closely allied in systematic position. This mycorrhiza is of the endotrophic type, *i.e.*, the mycelium permeates the tissues and invades the living cells of the root. The incidence of infection varies from plant to plant; sometimes all roots are affected, sometimes only a few; sometimes the hyphae are conspicuous in the external region, sometimes they are more deeply placed. As a rule, only the wood and vascular tissues are immune from invasion. The mycelium present is curiously similar in type and produces usually a number of spherical and pear-shaped swellings believed to function as storage organs. In the earlier stages of infection many of the root-cells are filled with clusters of short hyphae often profusely branched; in the later stages this intercellular mycelium becomes structureless following upon active digestion by the host cells. It is a puzzling fact that this type of mycelium, so widely distributed and so apparently unspecialised in relation to the species of host, has hitherto resisted all attempts to isolate and cultivate it outside the plant. It appears to belong to a fungus or fungi widely distributed in soil, possibly often associated with decaying vegetable material, but nothing is known with certainty in respect to its systematic position.

The ability to penetrate living roots is evidence of quasi-parasitic habit, and its vigorous development within the cells undoubtedly results in the transference of foodstuffs, such as starch, sugar and the like, from root-cell to fungus, a deleterious effect upon the host that is compensated later by the digestive action just described. Whether or not there is a balance of gain to the vascular plant due to materials brought in from the soil; whether the mycelium facilitates the intake of water or salts, or enables the host to draw upon sources of carbon and nitrogen otherwise inaccessible, can at present only be surmised, since it is not known whether plants thrive better or worse lacking their fungus visitor. The matter can best be discussed in the light of what is known with greater certainty in such cases as have been studied experimentally; *e.g.*, Orchids, forest trees and Heaths.

The main facts respecting Orchid mycorrhiza are well-known. The difficulties encountered by Orchid growers in germinating seeds, Noël Bernard's discovery of the obligate character of the relation between fungus infection and seedling development, and the association of specific strains of fungi included under the generic names Rhizoctinia, or Orcheomyces, with individual Orchid species, have all become matters of common knowledge. Bernard's conception of the relation between fungus and host in Orchids as one of parasitic attack countered by a mechanism confering relative immunity upon the host has illuminated many aspects of the problem, but it does not provide an explanation of the most characteristic features of the relationship, namely, the obligate relation with seedling development and the association of specific strains of mycelium with particular Orchids over wide geographical areas.

It was in Orchids that the true nature of root infection was first clearly recognised, and the physiology of the symbiotic relationship soon attracted wide attention. With respect to nutrition, it can hardly be doubted that the balanced relation in living Orchids has been evolved from one following parasitic attack upon the roots by soil fungi, although the evolution of an obligate relation of this kind offers an unusually difficult problem to the student of heredity. Admitting the force of all the traditional arguments based on the utilisation of organic humus compounds by the mycelium, and the wholesale digestion of hyphae that takes place subsequently in the root-cells, there remains much that is puzzling in the relation of fungus and host in this group of plants. An outstanding difficulty in attributing a beneficient rôle to the mycelium lies in its relatively scanty development on the external surface of the roots. In the case of lime-loving species, moreover, it is not clear that a significant increase of nutrient substance can be obtained from organic sources in calcareous soils. On the other hand, Orchids show a characteristic intermittent type of infection which, in itself, involves a recurrent "tapping" of the contents of hyphae in direct contact with the soil humus, while the existence of a large growing of non-chlorophyllous forms provides a tempting argument in favour of the view that the endophytic fungi play an important part in the nutrition of both green and non-green species.

In opposition to the commonly accepted view, a claim has been put forward recently that the root fungi of Orchids can utilise atmospheric nitrogen. This claim is based on experimental studies of the mycorrhizal fungi isolated from Neottia, a characteristic humus Orchid lacking chlorophyll, from a number of wild green species, *e.g.*, Orchis, Gymnadenia and Helleborine, and, more recently, from various cultivated tropical species. The evidence is reliable and, when supported by the study of a sufficient number of species, may well become irresistible.

In general, it appears to be fairly certain that a better understanding of nutritional problems in Orchids, with special reference to mycorrhiza is bound up with the extension of the claim for nitrogen fixation, and also with more accurate information as to the exact mode of nutrition of non-green species as of other so-called saprophytic flowering plants native in humus soils. Modern research methods have not yet proved adequate to the task of germinating seeds of the latter, a necessary preliminary to the effective study of these curious and interesting plants.

An aspect of mycorrhiza of greater practical interest to Orchid growers is the application of symbiotic or asymbiotic methods to facilitate the germination of seeds. Symbiotic methods, *i.e.*, the germination of seeds in contact with mycelium of the appropriate fungus strains, have been used with great success by individual growers in this country and elsewhere. notably, by the late Mr. Charlesworth at Haywards Heath, and by M. Bultel at Armainvilliers. For their successful application and extension a certain standard of laboratory equipment and technique is essential, together with the services of a trained researcher capable of tackling problems on the spot as they arise. The nature of such problems is sufficiently indicated by the specialisation involved in the invariable association of particular fungus strains with individual Orchid species, and by the fact that Orchid-growing—whether on a commercial scale or otherwise, is concerned not only with the cultivation of known species, but also with the raising of new hybrid forms.

Asymbiotic methods of germination consist in replacing the stimulus to development normally given by the mycelium by supplying sugar and certain nutritive conditions determined by experiment in each case. The essential facts discovered originally by the late Noël Bernard, and for some years past subjected to exhaustive study by Professor Knudson, of Cornell University, and others, have already been applied successfully in commercial practice. Like symbiotic methods, however, they make relatively exacting demands upon laboratory equipment and technique, involving, as they do, the experimental determination of the exact and variable nutritive environment that favours germination in each case. Professor Knudson has reached the view that the observed relation of the root-fungi with seedling development cannot be correctly described as obligate. The association, he thinks, is related solely to the nutrition of the embryo Orchid, and consists in the liberation of sugar and other food materials by the action of the mycelium upon the constituents of the seed-bed and the production of optimum conditions in respect to acidity or the reverse. Moreover, he believes a similar effect can be brought about by fungi quite unrelated to those present in the root.

Knudson has determined the conditions requisite to ensure germination in a number of Orchids, and has grown healthy plants raised by these methods. Whether his view is correct, viz., that the presence of mycelium in the tissues of the embryo plays no essential part in the promotion of seedling development, is a subject of controversy. If accepted, it is difficult to account for the evolution of fungal strains especially adapted to particular Orchids, or to understand why these strains should be so widely distributed in nature.

The pressing need of the moment is for well-equipped research carried on under conditions that ensure a constant and liberal supply of seeds and other material, in close association with those most familiar with the practical difficulties of germinating Orchid seeds. *M. C. Rayner.*

(*To be continued.*)

YEW AND OTHER POISONOUS TREES.

A CASE IN POINT.

When a man grows a Yew tree or some other poisonous plant near the boundary of his property so that animals may get at it, in what circumstances will he be liable for loss if they eat it and die?

In the case on this point, A had on his land a Yew tree, which was near the divisional fence, but did not project over the boundary line. B was the occupier of the adjoining land, a grass field; he put some horses in the field in question, which apparently ate the Yew or some of the Yew leaves, and died. B. sought to make the owner of the tree liable for the loss he had sustained as the result of the death of his animals.

The judge, in deciding this case, where the Yew tree did not overhang or spread over the boundary line, distinguished it from a previous case where the branches had been allowed to spread into the field, and where the Court held that the owner was responsible for loss.

In the case in question, to get at the poisonous leaves the animals had had to stretch over the boundary line, and since it is the duty of their owner to keep them from trespassing (which technically they did so soon as they put their heads over the boundary), and not the duty of the neighbouring owner to guard against the consequences of such trespass, the owner of the animals was not entitled to compensation.

Such is the general rule. Some other interesting points, however, were referred to in the judgment. In the first place, it was said that if the owner of the land in which the tree stood was under an obligation to fence against the animals, then he might be made liable if through his failure to do so they got in to his property and ate the poisonous leaves.

Secondly, it was said that if the trees were put there to entice the animals to eat them the owner of the trees might be liable, but the mere fact that a Yew tree is likely to tempt an animal to put its head over the boundary and devour the poisonous leaves will not cast any liability upon the owner of the tree.

And thirdly, it was suggested that the defendants ought to be held liable for not taking precautions to prevent the horse reaching across to the tree; this was not upheld, although it was distinguished from a case where the tree was carted across a field by the consent of the owner of the field, and left there unprotected, in which case the liability might exist if some animals in the field were poisoned. *H. S.*

MESEMBRYANTHEMUM.

(*Continued from p.* 124.)

The following are a few supplementary genera from among those that I left to be dealt with at the time of publishing my previous keys until the material necessary to make a sufficiently perfect description should be available, and also descriptions of additional species and corrections belonging to the genera already dealt with.

GYMNOPOMA, N. E. BR.

Biennial or annual. Root stout, fleshy, branching. Leaves opposite or alternate, not united at the base (as is stated in books), flat petiolate or spathulate-lanceolate. Flowers 2–5 in a terminal cyme, sometimes solitary, pedicellate. Calyx obconic, acutely 5-angled on the ovary part, and the angles with or without small teeth scattered along them, unequally 5-lobed down to its union with the ovary. Petals numerous, free. Stamens numerous, erect, filaments slender. Stigmas 5, subulate, overtopping the stamens. Ovary inferior, shortly conical and 5-angled at the top, 5-6 celled; placentas on the outer walls of the cells. Capsule large, obconic, 5-angled, and with 5 valves and cells; valves without expanding-keels and marginal wings, flattish within, not expanding by being wetted, but separating and spreading when the capsule is ripe and dry, and remaining so without closing again; cells deep, open, without cell-wings or tubercles, and the thin cell-partitions rising in a conical manner much above the level of the bases of the valves. Seeds compressed, somewhat kidney-shaped, tuberculate.

The only known species is G. tripolium, N. E. Br., a native of the Cape Division of South Africa.

The name is derived from the Greek, *gymnos* bare, and *poma*, a lid, because the valves of the capsule are destitute of expanding-keels and marginal wings.

The true position of this very distinct genus, which I have not yet seen alive, is somewhat doubtful, but I propose to place it between Cryophytum and Carpanthea, because its habit and foliage is similar to that of those genera and their allies, although the structure and appearance of the flower and fruit is entirely different. In this genus the expanding keels of the valves of the fruit are aborted, so that there is no mechanism for opening and closing the valves, as in most of its allies. When ripe and dry the valves separate and spread out, and never close again; water has no influence upon them.

1. G. tripolium, N. E. Br.—Glabrous in all parts. Flowering stems arising from a radical tuft of leaves, 3–9 inches long, decumbent, with distinct internodes. Leaves lanceolate and petiolate or spathulate-lanceolate, acute or obtuse, 2–7 inches long, 4–18 lines broad, with the petiole channelled, dilated and sheathing at the base, but when opposite not united there. Pedicels erect in flower and fruit, 1–2½ inches long. Calyx with the two larger lobes 5–6 lines long, deltoid-ovate, acute, the other three shorter, broadly ovate or suborbicular, with membranous margins and a dorsal point. Corolla 12–15 lines in diameter, "opening in the middle part of the day, and of short duration," according to Haworth; petals linear, acute, 4–6 lines long, ¼-line broad, not, or but slightly, longer than the calyx-lobes, white. Stamens white. Stigmas overtopping the stamens. Capsule 10–11 lines in diameter, obconic, 5-angled; valves spreading, 2½–3 lines long, and 2–2½ lines broad at the base, deltoid, smooth and creamy-ochreous within; cells about half-an-inch deep, with thin and stiff pallid cell-partitions, rising perfectly erect in the form of an acute cone, and entirely without cell-wings. Seeds one line long, tuberculate, black. Otherwise as described under the genus.

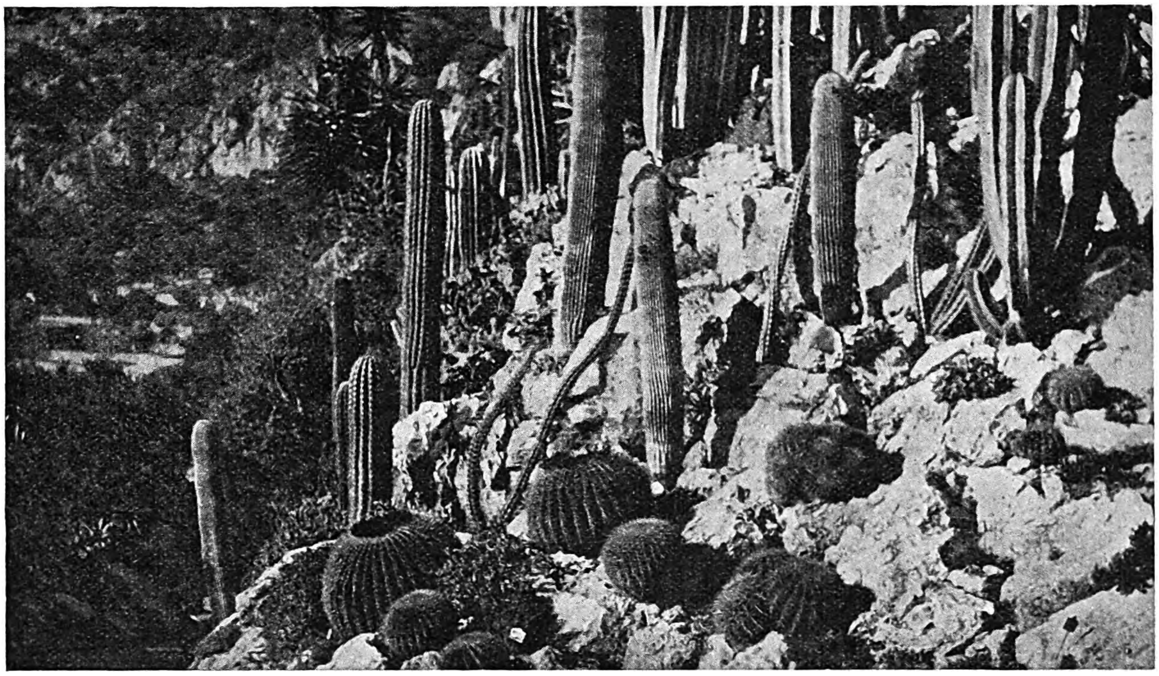


FIG. 100.—JARDIN EXOTIQUE: ECHINOCACTUS GRUSONII, CEREUS SENILIS AND C. NICHOLSONII (?).
(see p. 192).

M. tripolium, Linn., *Sp. Pl.* ed. 1. p. 481 (1753), founded upon Dillen, *Hort. Elth.*, p. 320, t. 179. f. 220; Haw. *Obs.*, p. 122 and 443, *Misc.*, p. 49, *Synop.*, p. 247, and *Rev.*, p. 167; Salm Dyck, *Mes.* § 64, f. 1; Berger, *Mes.* p. 42 and 43, f. 5. (The fruit figured as M. tripolium in Crisp, *Guide to Friar Park*, p. 132, belongs to Carpanthea pomeridianum, and that figured in *The Garden*, 1903, Vol. LXIV, p. 371, under the same name is a Composite, Odontospermum pygmaeum, O. Hoffm., the well-known "Rose of Jericho"). M. expansum, Thunb. Fl. Cap., p. 415, not of Linné.

Cape Division: In damp sandy places in various parts of the Cape Peninsula, Wolley Dod 3509! Bolus 7930! Pillans! Piquetberg Division: Pickiniers Pass, Pearson 5290! Clanwilliam Division: Oliphants River Valley, near Warm Baths, Stephens 7176!

According to information received from Mr. Pillans and recorded upon labels with specimens, this plant grows in damp places and in a sandy soil, so that under cultivation it should receive more water than most of these plants require, and probably a good sandy loam would suit it best. As it is a biennial, it must be propagated from seeds. *N. E. Brown.*

(*To be continued.*)

THE GENUS PRIMULA.

(*Continued from p.* 177.)

AERINANTHA (Balf. f.) Airy-flowered P.
(Muscarioides.)

A PERENNIAL species of decorative value and compact habit. Leaves two to three inches long, oblong or elliptic, blunt, thin, smooth, margins with sharp teeth. Flower stems nine to twelve inches tall, erect, slender, smooth below, mealy upwards and among the flowers. Flowers in dense, short spikes, almost stemless, of a soft clear blue colour, fragrant. Corolla half-inch across, concave, slightly bifid, deeply cleft into five oval, spreading segments, with a small tooth in the cleft. Tube narrowly cylindrical below, inflated in the centre and constricted at the mouth, half-an-inch long. Found on wet mossy banks and ledges of limestone cliffs in ravines clothed with Pine trees in western Kansu in western China, at 9,000 to 12,000 feet above sea-level. Flowers in July in its native country. Introduced in 1914.

Culture: As for P. adenantha, with the addition of limestone chips.

AGLENIANA (Balf. f.) Agleni's P.
(Nivales-vera).

A robust, handsome species with a somewhat swollen base and leaves six to eight inches long including the stalk, with pointed, lance-shaped, coarsely toothed blades, more or less covered with white meal below. The stout flower stem twelve to sixteen inches tall, is also coated with white meal, especially amongst the blossoms; it bears a few-flowered umbel of beautiful flowers, usually of a soft primrose-yellow colour, with an orange eye, more or less covered with white meal on the outside. Specimens are to be found with pale rose or nearly pure white blossoms. It is found in moist meadows and alpine pastures in open situations in western Yunnan and south-eastern Tibet, attaining an elevation of 15,000 feet above sea-level.

Culture: Good, rich, fibrous loam and leaf-soil, in moist, sunny spot, well-drained in winter, is indicated.

AITCHISONII (Pax). Aitchison's P.
(Nivales).

An erect, grey-green, tufted perennial. Leaves two-and-a-half to three inches long, broadly lance-shaped, blunt, smooth, somewhat fleshy, tapering to a distinct narrowly winged stalk; margins wavy, not toothed. Flower stem three to five inches tall, slightly flexuous, bearing an umbel of about five purple blossoms on slender stalks one inch in length. Corolla about three-quarters-of-an-inch across, deeply divided into five oblong, slightly cleft lobes; tube narrowly cylindrical below, much swollen upwards. Flowers in June and July. Found in the Kurrun valley, near Sikaram, in Afghanistan, at 12,500 to 15,500 feet above sea-level.

Culture: As for P. Agleniana. (*Pax and Knuth Prim*, Fig. 29).

ALGIDA (Adam). Cold-loving P.
(Farinosae.)

Deciduous perennial, forming loose, few-leaved rosettes. Leaves one to three inches long, spathulate or narrowly oblong, tapering to a winged stalk, margins finely-toothed and undulate; mealy or smooth. Flower stems slender, erect, four to eight inches tall, bearing three to six flowers of an intense violet colour, in a rather compact umbel. Corolla half-inch to five-eighths-inch across, flat or slightly concave divided into five broadly ovate, deeply divided segments, with a shallow notch at the tip of each lobe which almost overlap one another, forming a rounded blossom; tube half-an-inch long, more or less cylindrical, constricted at the mouth. This beautiful plant is closely related to P. farinosa, and is found in peat bogs and moist mountain meadows from the Caucasus to Afghanistan, and northward to the Altai of Siberia. Flowers in spring.

Culture: Plant firmly in peat, fibrous loam and sharp sand in a half-shady spot in the rock garden and treat as a bog plant during its vegetative season. Protect with dry cocoanut-fibre and a pane of glass overhead in winter. There are several forms.

Var. armena (Koch.), leaves more or less covered with pale yellow meal.

Var. Brotheri (Pax), leaves entire.

Var. longepedicellata (Sommr.), with long flower stems.

Var. sibirica (Ledeb). Calyx green, flowers violet.

Var. sibirica form colorata (Regl.). Dark violet calyx.

Var. sibirica form exscapa (Ledeb.). Almost stemless.

ALLIONII (Loiselr.). Allioni's P.
(Rhopsidion.)

Perennial, retaining its old foliage. Leaves in dense rosettes, one to three inches across, spoon-shaped or narrowly oblong, entire or slightly toothed, half-an-inch to two inches long, grey-green, densely covered with glandular hairs which exude a viscid secretion. Flower stem nearly obsolete. Flowers nearly stemless, from one to six in number, pinkish-lilac, clear pink or pale purple with a white eye. Segments of the corolla rounded, deeply notched, half- to three-quarters-of-an-inch across. Very local, on limestone cliffs and in caverns at low elevations in the Maritime Alps of northern Italy. Flowers from January to July.

Culture: Plant in limestone or granite moraine in shade, or in a cleft or cavern in a limestone rock. Quite hardy. *Gard. Chron.*, 1913, p. 85, fig. 43. *Moggridge Fl. Mentone* t. 65. *A. W. Darnell.*

(*To be continued.*)

THE NAMES OF FRUIT-TREE PARTS.

In view of the want of a vocabulary in our language for the different parts and organs of fruit trees, the suggestion was made to the late Mr. Dykes that an informal committee should meet and discuss the matter with the prospect of introducing and standardising suitable terms. Unfortunately, the scheme aborted. The perusal of some dozens of the works of French writers, both ancient and modern, showed that although France has a far greater and more complete vocabulary, so that pruning directions, etc., become intelligible, there existed a considerable want of conformity in the use of various terms.

The Société Pomologique de France was then approached in order that a standardised set of terms might arise; there followed a series of articles on terms by MM. Abrial, Rivière and others in *La Pomologie Francaise* (the journal of the Société) and the institution of a combined committee, which reported at last year's congress at Paris. The following translation of the summary of definitions to be used in relation to fruit tree culture was adopted and recommended to teachers and growers.

Oeil (eye). The eye, in fruit-growers' language (*bourgeon* of botanists) is the small conical or ovoid body found at the axils of the leaves of our fruit trees.

Oeil à Bois (wood eye). This always develops into a shoot (*bourgeon*).

Oeil à Fleur ou à Fruit (blossom bud or fruit bud). This is an altered wood-bud, which contains germs of both blossom buds and wood eyes at the base of the inflorescence in the Pomaceous fruits, but in the stone fruits only blossoms. The blossom bud of the Pomaceous group is generally large and ovoid; that of the stone fruit group is rounded.

Oeil Stipulaire (stipulary eye). These are small eyes which are situated on either side of the (main) eye in certain species and varieties.

Oeil Latent (dormant or latent eye). This eye is more or less visible, but only develops by reason of severe prunings or damage.

Oeil de Taille. An eye which becomes terminal by reason of a pruning cut.

Yeux Multiples (composite eyes). These are groups of blossom or wood-eyes, especially of stone fruit trees.

Bourgeon (shoot). The growth from an eye. furnished with leaves, retaining this name till the fall of the leaves. (Note that the botanist calls an undeveloped eye a "*bourgeon.*")

Bourgeon Adventif. A shoot from an adventitious eye, *i.e.*, a latent one.

Bourgeon Anticipé (premature, or side shoot). A lateral, developed during the season's growth of the shoot.

Rameau (last season's shoot) or *Rameau à Bois.* A shoot which has lost its leaves and become woody.

Coursonne. A branch of various age from a main supporting branch which has been pruned short and carries fruiting organs. (A spurred back shoot is an equivalent phrase of some writers, but we have no definite word. Note that Lorette did not use it in this sense.)

Gourmand (gross shoot, water shoot, gourmand). Very vigorous shoot which develops at the expense of neighbours.

Dard. Branchlet with either smooth or wrinkled bark, ending with a wood-bud and furnished with three to five leaves and sometimes a spine.

Lambourde (fruit spur). A short growth, either smooth or wrinkled, unbranched and ending in a fruit-bud. (Note the much-branched fruiting spur, *lambourde multiple*, does not receive attention).

Bourse. Almost fleshy production from the swelling of the floral axis of the Pear; its development is dependent on the formation of a fruit. (Some English writers have adopted the word *bourse* for this important organ; some years ago I suggested that Lawrence's term "knob" (1717, A.D.) should be reintroduced. It may be noted that although a more complete development occurs in the Pear, similar productions may be seen with the Apple and even the Quince and Medlar.)

Bouquet de Mai. A very short branch, usually ending with a wood-bud and surrounded with blossom-buds, occurring in the stone fruit trees.

Brindille (twig, small twig). A thin, flexible shoot of variable length with inconspicuous eyes except one terminal one, and sometimes ending with a blossom-bud in its first season.

Chiffonne. A thin branch of variable length, only bearing blossom-buds, but ending with a wood-eye. (Note: Only used in case of stone fruit trees, by numerous authors.)

Tête de Saule (Willow head, locally "besom"). Bundle of shoots engendered by succession of short prunings.

It will be seen that the word *bouton* disappears although so often used for the flower or fruit bud in contradistinction from the wood-eye (*oeil*); it was suggested that if the word *bouton* were hall-marked for fruit-buds and *oeil* for wood-buds, we could adopt a very close terminology by standardising "bud" for the former, and "eye" for the latter, but this suggestion did not appear acceptable. Further, it will be observed that no designations are suggested for the stages of the developing fruit organ, where again it might be possible to adopt closely allied terms. For instance, in its first season (in the Pomaceous tribe), a tiny bud, with often three rather diminutive leaves, the phrase "baby-bud" (French, *bouton bébé*) would be applicable and free from confusion or circumlocution; its next stage before reaching maturity might be called the "child-bud" (*bouton enfant*), after which, when fully mature and floriferous, it would become the "bud" simply. There is, I think, a distinct need for some concise terms to mark these forms, which indeed, is exemplified in Lorette's writings, where he boldly diverts the word *dard* from its customary meanings and applies it to the early phases of the blossom bud.

One day, perhaps, we shall have a vocabulary in English, and it will be possible to write intelligibly on pruning without oft repeated paraphases and obscure directions. *H. E. Durham.*

FRUIT REGISTER.

APPLE LANE'S OAKLAND SEEDLING.

Some nine years ago, I was persuaded to include this late dessert Apple in an orchard of standards. We planted three specimens and they have fully justified their existence. The growth is vigorous and spreading, making a good standard. The tree is also of the hardiest, and its fertility is good. The fruit is fairly large, somewhat flat, pale green with a red flush on the exposed side and slightly russetted. The flavour is excellent, somewhat resembling that of Cox's Orange Pippin. Lane's Oakland Seedling is at its best in February and March, which makes it additionally valuable.

This variety was raised by Mr. J. E. Lane at his Berkhamsted nursery, about 1878. It received an Award of Merit at the Temple Show in 1894, but until quite recently, apparently failed to attract notice. It is not even included in Mr. E. A. Bunyard's handbook of *Hardy Fruits.*

Reports from various parts of Hertfordshire and Buckinghamshire testify to the excellence of the variety, especially on shallow, gravelly soils. *G. W. Stacey, Chorley Wood Cedars.*

VEGETABLE GARDEN.

PEAS.

There are few vegetables more eagerly anticipated than are these, and where one has warm, south borders at command, seeds may be sown early in March, if the soil is in a suitable condition. The site should have been well-dug and manured, or, better still, should have been trenched during the winter and allowed to lie rough until sowing time, after having been given a good dusting of soot and wood-ashes. Previous to sowing the seeds, the soil may be forked. The drills should be made about five inches wide and two inches deep, and they should be made firm with the back of the rake.

Dwarf varieties, ranging in height from one foot to three feet, are usually used for these early sowings, the drills for these requiring to be made about two feet apart, and for the taller ones about a foot wider.

Sow the seeds thinly, and cover them with an inch or so of soil.

A better and more certain method is to raise the Peas in pots or boxes; so soon as the young plants are about three inches high, plant them out in the drills. These plants will commence bearing much earlier, and the produce will be finer.

There is nothing to be gained by sowing the seeds or planting Peas too thickly, and this should be borne in mind at all times. The stronger-growing the variety is, the more room should the seeds or young plants be given, and the better will be the results.

The seedlings may be protected from late frosts with a few Spruce boughs placed along the rows, but these should be removed so soon as the plants have made a good start, or they will become drawn and weakly. When the Peas from the outdoor sowings have made a little progress, some soil should be drawn up to them, and they should be staked so soon as possible. The ground along the rows should be frequently hoed, and if very dry weather prevails, some heavy soakings of water will assist them greatly, while a good mulching of old Mushroom-bed manure will also help to conserve the moisture.

Whether the dwarf or taller varieties are grown, the plants may be stopped when they reach the top of the sticks; this will tend to make them yield earlier.

Frequent sowings may now be made in selected parts of the garden, preference being given to open positions where the plants can obtain plenty of light and air. Peas revel in a deep root-run, and they will withstand a dry season much better if a good depth of soil can be provided for them, and this will also save much time and labour in watering if the summer should prove dry and hot.

The seeds of the later varieties should be sown in the same manner as suggested for the early ones. If birds are troublesome, wire Pea-guards or nets should be placed over them, and two or three breakback traps will guard them against mice.

So soon as the seedlings are of sufficient size they should be staked with twiggy sticks, the tops of which may be trimmed off according to the height to which the variety will grow; small twigs may be placed along the rows to assist the plants in securing a good start.

Peas growing in long rows should be about seven or eight feet apart, and the spaces between the rows may be utilised for growing dwarf crops, such as summer Cabbage, Cauliflowers and Lettuces. The ground along the rows should be forked when staking is finished to give it a tidy appearance, and when the plants are growing well, they may be mulched, if the weather is warm, with strawy litter or leaves. Mulchings should always consist of light material so as to allow a certain amount of warmth to penetrate to the roots; grass cuttings or hay should not be used as these tend to exclude air, thereby possibly causing the buds to drop. Water, if required, should be secured from an open pond or reservoir that has been partly warmed by the sun; cold water from a tap or well will do more harm than good, and will possibly cause mildew to make its appearance. *R. W. Thatcher, Carlton Park Gardens, Market Harborough.*

HOME CORRESPONDENCE.

The Gardens of the Poets.—Judging by the conversation around me at Olympia, I gathered that the public greatly admired these gardens. The exhibits were colourful, but in some cases very unnatural. Nearly every garden had a waterfall or fountain in some grotesque form. It would have been a welcome change to have seen a still pool with flowering trees and shrubs reflected in it. One exhibit was most extraordinary. The garden consisted of a collection of succulent plants, with a pool containing goldfish in the centre. Apparently some of the visitors thought that this type of garden could be cultivated in this country. As a rule, succulent plants are found in rocky and arid places; surely not in the vicinity of a pond full of goldfish. It is very misleading for the public to see such an exhibit where succulent plants are used as though they were outdoor subjects. If rocks were used instead of grit to show off the plants, the succulent garden would have looked more attractive, even though it remained impracticable for an English Ideal Home! *H. Bruins Lich.*

Strawberry Troubles.—Your correspondent, *W. B.* (p. 161), is not alone in regard to Strawberry troubles. I have tried all sorts of methods but fail to get satisfactory results. I am living on the south side of Birmingham, and had concluded that some of the fault was due to the unkind atmospheric conditions, but this cannot be the case, seeing *W. B.* is suffering precisely in the same way in Surrey. Some few years ago I had excellent results from such varieties as Royal Sovereign, Sir Joseph Paxton, President, Vicomtess Hericart de Thury and Waterloo; to-day they are useless. Recently I tried The Duke and Madame Kooi; in less than two years the former ceased to exist; Madame Kooi certainly gives a few fruits, but of little value. For about four-and-a-half years I had charge of the successful Strawberry beds in a Surrey garden where little or no difficulty was experienced; likewise, for a similar period, in Staffordshire and also in my present position, up till about seven or eight years ago, but since then the Strawberries have gone from bad to worse. *J. M., Kings Heath.*

Grass for Games.—I was interested in the way *W. P. W.* (p. 161), used sulphate of ammonia on his grass. When I took charge of the sports grounds here, twenty years ago, the cricket pitch and tennis courts were full of Clover, Daisies and Yarrow; like *W. P. W.*, I scattered sulphate of ammonia over the grass, but instead of the evening, I applied it in the morning, on a bright sunny day; the next day it was washed in with the sprinkler. Soon after the sulphate of ammonia was applied, beads of moisture formed on the leaves, and the sun shining on them destroyed them and so weakened the plants. I treated the grass in the same way three times during the season, and again the following year; since then I have had very little trouble with either of the weeds. Every winter I give a good dressing of bone-meal and soot mixed with clay; early in March, May and August, I give a light dressing of ammonia mixed with clay. I use clay because the soil is light and chalky, and the wickets crumble with the hard wear. *H. B., Broadstairs.*

Euphorbia jacquinaeflora.—The enclosed snapshot may be of interest; it represents a large plant of Euphorbia jacquiniaeflora that was one year old when planted out four years ago; it is now sixteen feet high, fourteen feet across, has carried four hundred flowering sprays this year, and has been in flower for two months. I also enclose a few sprays. *A. E. Yallop, The Gardens, Locko Park, Spondon, Derby.*

[Unfortunately the photograph was not suitable for reproduction, but it indicated a wonderful specimen, splendidly grown. The sprays received were very fine. EDS.].

The Hot-water Plant.—In Shropshire, last year, my landlady told me of a plant she knew and grew under this title. She produced three tiny tubercles and proceeded to plant them very deeply in a small pot of garden mould. Planting finished, she put the pot in a saucer on the kitchen sill and poured boiling water into the saucer. Whenever the soil dried, recourse was had to the kettle, and under this amazing treatment growth took place. When the little plants were large enough, they were given separate pots in which they made much growth and were covered with flowers from August onwards. After growth died down the pots were put away on the scullery shelf until May, when they will be started again with the hot-water treatment. I believe the plants to be Achimenes multiflora, but I mean to verify it this year. *A. E. C. T.*

An Ideal Park Superintendent.—The recent lecture on "My Ideal Superintendent" and the reply in last week's *Gardeners' Chronicle* are very interesting, especially to those who, like myself, have planned their horticultural education with a view to obtaining a Superintendent's post and yet find themselves unsuccessful. May I state my case? I have had a life experience in horticulture commencing with time spent in good private establishments and followed by a period as head gardener. I have excellent references. Then I went into a nursery and gained a thorough practical experience of Roses, alpines, shrubs, propagation, bedding for effect, and general nursery stock. This experience was followed by landscape work which has included hard and grass tennis courts, bowling greens and the general lay-out of sports grounds (levelling, draining and estimating), rock and water gardens, dry walling and crazy paving. I have also studied and hope to get my Diploma this year. Can anyone tell me how to obtain a suitable post? A recent advertisement specially asked for a man who could lay out sports grounds and was able to prepare estimates, yet, I believe, the man who obtained the post was a specialist in rock work. *F.R.H.S.*

Gladioli.—With reference to the leading articles upon Gladioli published in recent issues of this journal (pp. 129, 147), it is a pity that no reference was made to the work of the late Mr. George Mair, of Prestwick, Ayrshire. No historical note upon the subject of this flower, however short it may be, would be complete without some mention of the strain evolved by the late Mr. Mair. I do not think I exaggerate when I say that the finest examples of Gladioli ever staged in this country were those put up by this grower at the autumn shows of the Glasgow and West of Scotland Horticultural Society and the Royal Caledonian Horticultural Society. Seedlings of this strain have been occasionally shown in London by a well-known Scottish firm, and the press comments upon these exhibits are sufficient to enable one to judge of their excellence. Mr. Mair could never be persuaded to go in for competitive work in London, although several friends were most anxious to get him to show his flowers in order to demonstrate the high quality of his strain. He was particularly proud of the fact that he had kept to the true Gandavensis type, and there can be no question of the fact that he was one of the leading pioneers in the evolution of this now popular flower. Some of the varieties raised at Prestwick are unrivalled by any others. I hope his sons, who are now carrying on the business, will exhibit their flowers at the London shows. If they put up flowers of the quality exhibited at Edinburgh and Glasgow they would sweep the boards. Historians of the Gladiolus cannot in equity pass over the work of Mr. Mair. The mere fact that he was only a small grower in Ayrshire is all the more credit to him. *George M. Taylor, Edinburgh.*

Pruning Stunted Fruit Trees.—Perhaps your contributor, *Market Grower*, might be interested in the following extract from *The Lorette System of Pruning*, as the condition it refers to seems to be similar to, if not the same as, that described by him in your issue of January 14, page 33, column 1: "Pruning Stunted Trees." On page 77, under the general heading, "The Pruning of Older Fruiting Laterals," the following will be found: "3.—Old fruiting laterals which are bare of new growth and on which fruit is borne at a point which gets further and further from the main branch.—Examples of this frequently occur on, etc.—I have not hesitated when the trees were in full leaf to cut back these laterals to their base on the old wood, leaving neither leaf nor any other sign of life. This pruning has given me astonishing results. At the present moment all the fruiting branches thus treated bear numerous eyes and 'darts' (undeveloped fruit spurs). This same operation carried out by winter pruning usually produces vigorous shoots." *R. R. H. Moore, Painswick Lodge, Cheltenham.*

Forced Rhubarb.—Mr. Auton, in your issue of January 28 (p. 69), raises a very interesting point concerning the forcing of Rhubarb. Most gardeners, as a matter of course, exclude all light when forcing Rhubarb, but when asked the reason for doing so they usually fall back on the fact that it has always been the accepted custom. To my palate, Rhubarb forced in complete darkness has a peculiar and distasteful earthy flavour that is quite absent if a fair amount of light has reached the crowns. The colour, especially of Victoria, a good forcing variety, is naturally more pleasing when forced than when grown entirely outside. The stems lengthen more when produced in the dark, but at the expense of girth, and the difference in the time gained is scarcely noticeable. The gardener who has a Mushroom house finds it convenient, no doubt, to place his Rhubarb-crowns in there together with Seakale, Chicory, etc., but the gardener without that advantage who has to use space under the stages in plant houses, or odd corners in the fruit houses, will be well advised to try giving the Rhubarb so much light as possible. Once he has done so he will never go back to the old system. Market growers, with their special conveniences for forcing vegetables, know their own business best, and in any case they grow for sale. Forced Rhubarb in the market is forced Rhubarb, whether it tastes like the real article or not. *W. B.*

Birds and Fruit.—*W. S. F.* very magnanimously writes (*Gard. Chron.*, p. 107) that "the value of birds in general is unquestioned . . . No gardener wishes their destruction." Further on he states: "The blue-tit is a perfect rogue, and if his extermination could be accomplished by voting, that vote would be quickly and cheerfully given by me." We must therefore conclude that either blue-tits are not birds, or *W. S. F.* is not a gardener! No, *W. S. F.*, it won't do. Because you have a real or fancied grievance against the blue-tit you want it exterminated, and because someone else has a grudge against the bullfinch he wants *that* bird exterminated, and so on and so on. On the other side I have read somewhere of a man who netted part of his garden to prevent the birds from damaging the fruit buds, and he did it so effectively that the inside of the netted part was completely devastated by injurious insects, whilst the rest of the garden provided a normal crop! Again, in a delightful little book called *Wild Nature and Country Life*, by "a Woodman," the following passage occurs on p. 56: "A friend once told me of a Plum tree in his garden that in spring was attacked by bullfinches so much that his wife thought there would be no Plums. He asked me to come and look at the tree at the season when Plums are ripe, and there I saw one of the heaviest crops of fruit I have ever seen. Nearly every bough was propped up with forked sticks thrust into the ground to take off the weight of the fruit." I have read similar accounts before of bullfinch-devastated trees! Next time *W. S. F.* finds blue-tits causing havoc amongst his Peas let him shoot one or two of the culprits and send the bodies, with some of the damaged pods and some of the undamaged ones, to Dr. Collinge, and then send the Doctor's report on them to this paper. Meanwhile, will he (*W. S. F.*) and all your other correspondents who are so hot against the birds, recall what happened in 1917 and 1918 after the wholesale destruction of insectivorous birds in the winter of 1916-7, and, as I recommended before, get a copy of the R.S.P.B. booklet, *Farm, Garden, and Birds* (one shilling) in which those of them who want to will find out how to protect Peas from birds. Many of them seem to have much to learn about birds. *C. Nicholson,*

SOCIETIES.

ROYAL HORTICULTURAL.

March 13 and 14.—At this, the first two-days' show of the year, the Royal Horticultural Hall, Vincent Square, was filled entirely with legitimate exhibits; paintings, drawings and such will not be accepted again until the autumn is well advanced. In spite of the return to severe wintry weather there was no lack of bright flowers in the hall. Orchids were again shown in considerable quantity and of high quality. Cymbidiums were extensively staged and there were also many excellent plants of other genera. The Orchid Committee recommended five awards to novelties. The Floral Committee found a considerable variety in the many exhibits; the most extensive were of greenhouse Cyclamen, hardy and half-hardy Rhododendrons, flowering shrubs, Carnations, Hyacinths and rock garden plants. This Committee recommended five awards to novelties. Narcissi and Tulips were displayed in quantity and were very attractive. The Narcissus and Tulip Committee recommended one award to a new variety. A large collection of dessert and culinary Apples was the only exhibit before the Fruit and Vegetable Committee.

Orchid Committee.

Present: Mr. Frederick J. Hanbury (in the chair), Mr. Gurney Wilson (Hon. Secretary), Mr. Lionel de Rothschild, Mr. Stephenson R. Clarke, Mr. Stuart H. Low, Mr. A. McBean, Mr. J. C. Cowan, Mr. Charles H. Curtis, Mr. J. E. Shill, Mr. H. G. Alexander, Mr. Fred K. Sander, Mr. R. Brooman White, Mr. J. Wilson Potter and Mr. A. Dye.

Awards of Merit.

Cymbidium insigne var. Mrs. Carl Holmes.—A lovely variety and one of the deepest coloured sorts we have seen. The colour is deep rose with paler shading towards the bases of the sepals and petals; the lip has radiating lines of elongated rose spots on a rosy-blush ground. Shown by Mrs. Carl Holmes (gr. Mr. W. J. Penton), The Node, Welwyn.

Cymbidium Landrail var. Ophir.—A very distinct form, with large substantial flowers of pleasing buff colour suffused with a faint shade of salmon-pink; the lip is of similar colour with light brown side markings and an intense brown horse-shoe mark at the tip. Shown by Robert Paterson, Esq., Stonehurst, Ardingly, Sussex.

Cymbidium Letty, Exbury var. (*Gottianum × Merlin.*)—A very pretty variety with greenish cream-coloured sepals and petals of fine substance; lip white with rose margins, and a central band of yellow and chocolate blotches on either side of it at the tip. Shown by Lionel de Rothschild, Esq. (gr. Mr. A. Bedford), Exbury, Southampton.

Brasso-Cattleya Sindore (*B.-C. Vilmoriana × Cattleya Empress Frederick*).—A large-flowered and handsome hybrid with broad, slightly frilled petals and fairly broad sepals, all of a pleasing mauve shade; the big lip is frilled and fringed, mauve, shading to the large orange-yellow centre, which is marked with brown. Shown by F. J. Hanbury, Esq. (gr. Mr. Farnes), Brockhurst, East Grinstead.

Catasetum Christyanum (?).—A very striking plant, unnamed, and from the Amazon region. We believe it to be identical with C. Christyanum described in *Gard. Chron.* in 1882. The spike, as shown, is about sixteen inches tall, and carries eight flowers. The narrow sepals are dark brownish-red; the petals, narrow and erect, and almost enclosed between the margins of the dorsal sepal, are pale brown, heavily spotted with dark red-brown. The lip is pale green with a white area around the bucket-like central depression. The forward part of the lip is three-lobed, toothed or fringed at the margins, creamy-green with deeper green spots. The column has an extended linear apical portion and two outward-curved, pale green, teeth-like processes towards the base. The back of the column is freely dotted with brown over green. The pedicels are brown and the stem brownish-green. Shown by Messrs. Charlesworth and Co.

Groups.

Cymbidiums—now among the most popular of Orchids—were extensively and finely displayed by Messrs. Sanders, whose group was, perhaps, a trifle crowded with good things. Cymbidium Hookerianum, St. Albans var., had twenty big blooms on one of its long, pendant spikes; C. Erica Sander was represented by numerous colour forms; C. Yellow Hammer, C. Pauwelsii var. Bruge Belle, C. P. var. Glamour, C. Plover and C. Canary, lent pleasing light colour to the group, while C. Louis Sander, C. Louis Sander var. Grenadier, C. St. André and C. Ceres in variety, gave shades of deeper colour, and C. Egret, C. Argent, C. Venus, C. Alexanderi and C. Beauty were among the best of the white-ground sorts. There were hundreds of spikes in the group, and some of the plants were of large size, notably a deep form of C. Ceres.

A large and handsome display by Messrs. Armstrong and Brown consisted principally of Cymbidiums; indeed, so far as Orchids were concerned this occasion was almost a Cymbidium show. A few of the most arresting kinds from Tunbridge Wells were C. President Wilson, C. Pauwelsii roseum, C. Curlew var. Daffodil, C. Joy Sander, C. Gottianum, C. Titania rosea, and C. Fortuna rosea. With these were associated Odontioda Lambeauiana, O. Mrs. F. M. Ogilvie, O. Zephyr, O. Sunray, O. Diana, O. keighleyense, and other bright-hued varieties in addition to Cypripedium Venus, Orchidhurst var., Epidendrum Burtonii, Laelio-Cattleya Arcturus, very attractive, L.-C. Ernestii, and various Odontoglossums including O. Belenus with a branching spike of about fifty large flowers (Cultural Commendation).

Messrs. Charlesworth and Co. showed fine spikes of Odontoglossum crispum, O. Exmouth, O. Palmyras Queen, O. Melpomene, O. Cordoba, O. Tityus and O Martius, and also exhibited Pholidota convallaria, with five spikes of its creamy, Lily-of-the-Valley-like spikes of bloom; Odontonia Baroness Schröder, Dendrobium Brymerianum and a fine plant of a Catasetum sp., from the Amazon. Messrs. Black and Flory showed Sophro-Laelio-Cattleya Vulcan, with intense ruby-purple lip, and the white Cattleya Edithiae. Mr. Hanbury showed a very fine form of the old Dendrobium primulinum.

The very pretty and distinct Sophro-Cattleya Shimadzu was the central feature of Messrs. Stuart Low and Co.'s group; this has rich, reddish-rose-coloured sepals and petals and a yellow and rose-red lip. Other interesting subjects included Laelio-Cattleya Myra, L.-C. Illustrious, Masdevallia cucullata, Cirrhopetalum miniatum, Dendrobium Brymerianum, the old D. primulinum and D. aureum. Mr. Harry Dixon contributed numerous Odontoglossums, a few Dendrobiums, Lycastes, Cypripediums and a plant of the old but useful Ada aurantiaca.

Messrs. Cowan and Co. submitted a very pleasing group wherein Cymbidiums were the foremost subjects; these included C. Eagle, C. Pauwelsii, C. Grosvenor, C. Redshank, the pretty and neat C. Memoria P. W. Janssen, C. Letty, C. Hilary and C. Merlin. Odontioda Diana, Cypripedium Charles Richman var. Lilian Greenwood, Cattleya Tityus and Odontoglossum Matador were other fine things in this group. Messrs. Sutton Bros. had Oncidium Papilio in their modest group, Laelio-Cattleya Beatrice, Odontoglossum Pescatorei and Dendrobium formosum.

Floral Committee.

Present:—Section A.—Mr. H. B. May (in the chair), Mr. J. F. McLeod, Mr. Arthur Turner, Mrs. Ethel M. Wightman, Mr. C. F. Langdon, Mr. H. J. Jones, Mr. J. M. Bridgeford, Mr. Hugh Dickson, Mr. Donald Allan, Mr. M. C. Allwood, Mr. E. R. Janes, Mr. A. E. Vasey, Mr. James B. Riding, Mr. J. T. West, Mr. W. B. Gingell, Mr. D. B. Crane, Mr. D. Ingamells, Mr. Courtney Page, Mrs. Helen Lindsay Smith, Mr. Charles E. Pearson, Mr. G. W. Leak and Mr. W. D. Cartwright, Secretary.

Section B.—Mr. Gerald W. E. Loder (in the chair), Mr. Charles T. Musgrave, Mr. Hiatt C. Baker, Sir William Lawrence, Bt., Mr. L. R. Russell, Mr. T. Hay, Mr. Arthur Bedford, Lady Beatrix Stanley, Mr. E. H. Wilding, Mr. F. G. Preston, Mr. Eric M. Marsden-Jones, Mr. W. B. Cranfield, Mr. Mark Fenwick, Mr. G. Reuthe, Mr. W. J. Bean, Mr. R. C. Notcutt, Hon. Henry D. McLaren and Mr. N. K. Gould, Secretary.

Awards of Merit.

Cassiope selaginoides (K.W. 5,663.).—The award to this pretty little Himalayan shrub is subject to verification of name. It is a dwarf, erect species, with dark green, closely appressed leaves and bearing upwards of four solitary flowers towards the apex of the growths. The flowers are relatively, large, bell-shaped, white, and have long, mealy stalks and rosy-tinted calyces. In the same pot there was a rather more robust plant, not yet in flower, but well-set with flower buds, which have shorter stalks and calyces of a deeper richer colour. Shown by Lieut.-Col. L. C. R. Messel (gr. Mr. J. Comber), Nymans, Handcross, Sussex.

Chinodoxa nana.—This is a pale, nearly white "Glory of the Snow," of more interest to the alpinist than to garden lovers. Shown by G. P. Baker, Esq., Sevenoaks.

Freesia Albâtre.—A well-formed variety, with substantial, rounded, milk-white flowers which have a yellow blotch deep in the throat.

Freesia Delight.—A large-flowered variety which has whitish flowers with broad, rosy-mauve margins, and a small, yellow blotch deep in the throat. Both varieties were shown by Messrs. C. G. Van Tubergen, Ltd.

Hippeastrum Cerise Magnificum.—A very handsome variety. The flowers are large, round, and of vivid, glowing, rich cerise colour. Shown by Baron Schröder (gr. Mr. G. J. Henderson). The Dell, Egham.

For Trial at Wisley.

Iris Orange Queen.—This is one of the dwarf Crimean varieties, and bears relatively large, deep yellow flowers.

Iris Standard.—Of the same type as the above and of an uncommon shade of bluish-purple colour. Both Irises were shown by Messrs. Barr and Sons.

Groups.

Immediately inside the hall, Mr. J. W. Forsyth arranged a large collection of greenhouse Cyclamen of his Caledonian strain, which made a very bright display. All of the many plants were exceedingly well-cultivated, and illustrated a very desirable strain of this most useful greenhouse plant. These were arranged in distinct colours, and the chief were Scarlet King, Giant White Wonder, Excelsior, purple and white; and Shell Pink, and there were also good plants of several frilled varieties.

Adjoining their large display of Carnations, Messrs. Stuart Low and Co. arranged tall bushes of several Mimosas, with Epacris, Hippeastrums and Clivia miniata. Mr. G. H. Dalrymple again staged a large collection of his excellent coloured Freesias. In addition to several good seedlings, he showed Grey Dawn, Wasp, a yellow with "waspish" lines on the lower segments, Orange Queen and Orange King.

Forced Roses of considerable merit were staged by Mr. Elisha J. Hicks, whose chief varieties were Climbing Lady Hillingdon, of rich golden colour, Madame Butterfly, Madame Edouard Herriot, Mrs. H. Stevens, Ophelia and Padre. In another part of the hall Mr. George Prince set up well-filled vases of Fortune's Yellow Rose and Austrian Copper, with Allan Chandler, I. Zingari and Shot Silk. Mr. B. Pinney had vases of Violets in the Orchid Annexe.

A tastefully arranged group of Carnations was staged by Messrs. Stuart Low and Co., consisting of a bank of choice varieties that included Sheila Greer, Lady Hindlip, and the perpetual Malmaison Lady Daresbury. The raised centre was composed of Queen Mary, Melchet Beauty and Eileen Low, while the group was flanked by raised vases of Happidais, Daphne, Ruby Glow and White Pearl.

Messrs. C. Engelmann, Ltd., showed fine blooms of Canadian Pink, Coral Glow, Rouge, Laddie, Master Michael Stoop, White Pearl and Mrs. Hamilton Fellowes; while among the Carnations shown by Messrs. Keith Luxford and Co. were Enchantress Supreme, White Wonder, Aviator, Topsy, Cupid and Red Laddie.

The chief feature of Messrs. Allwood Brothers' well-arranged group were the several attractive varieties of Malmaison Carnations, included amongst which were the richly-coloured Delicata, the yellow Jessie Allwood, Mrs. C. F. Raphael, a variety not unlike Delicata, Oceanic and Cedric. Other noteworthy varieties of good quality were Edward Allwood, Laddie, in exceptional condition, Maud Allwood, Topsy, Cattleya Mauve, Radiolite, Spectrum and White Pearl.

On a considerable floor space, Messrs. Carter and Co. displayed many excellent Hyacinths, arranged in circles of distinct colours and relieved by floriferous bushes of double-flowered Japanese Cherries. Of the many Hyacinths we selected for special mention Grand Maitre, porcelain blue; King of the Blues, of darker colour; City of Haarlem, soft primrose-yellow; Panama, pale pink; La Victoire, deep pink; Myosotis, pale blue; Orange Boven, of pale salmon-orange colour; Elta, salmon-rose; L'Innocence, pure white, and Scarlet Light. In association with their alpine exhibit, Messrs. D. Stewart and Son staged pots of Hyacinths.

There were several very good collections of Rhododendrons. Lionel de Rothschild, Esq. (gr. Mr. Arthur Bedford), Exbury, Hampshire, showed very good sprays of R. ciliatum, a very large truss of blush-pink flowers which have a vivid carmine blotch; R. Nobleanum venustum, R. arboreum roseum, R. ciliatum, R. barbatum, of intense crimson colour; R. racemosum var. oleifolium, and a cross between R. ciliatum and R. moupinense.

Under the clock, Messrs. R. Gill and Son showed considerable quantities of R. barbatum, R. arboreum roseum of rich colour, R. Cornubia, R. ciliatum and Camellia reticulata. With his collection of general shrubs and alpines, Mr. G. Reuthe had trusses of R. arboreum nigrescens, R. arboreum roseum, R. Cornubia, the interesting little R. spinuliferum, and also showed, out of flower, the handsome foliage of R. Wightii and R. Falconeri.

Messrs. Robert Veitch and Son showed good branches of R. albescens, R. Veitchii and R. Fosteriana × Veitchii of the tender Rhododendrons, with R. sutchuenense, bright pink; R. Liliana, a large, vivid cardinal truss; R. ciliatum, R. lutescens and the pretty, blue-flowered Prostanthera rotundifolia.

In a group near the gallery stairs, Messrs. L. R. Russell, Ltd., displayed good specimens plants of several greenhouse Rhododendrons, including R. Countess of Haddington, R. Lady Fitzwilliam and R. Gibsoni superba, with a bordering of Japanese Azaleas.

An interesting collection of hardy and half-hardy trees and shrubs arranged by Messrs. Hillier and Sons included tall bushes of various Japanese Cherries, Pyruses and Prunuses rising above smaller plants of such uncommon Conifers as Cunninghamia Konishii, Taiwania cryptomerioides, Juniperus pachyphlaea and J. drupacea.

Most of the many rock garden exhibits were arranged with considerable skill. Mr. Clarence Elliott had a very convincing rock garden, which he planted very tastefully. His chief alpines were Saxifraga oppositifolia Latina, S. Griesbachii, Wisley var., S. Mira, Soldanella alpina, Sisyrinchium graminifolium, Primula marginata and P. Allioni. He also had a group of very shapely dwarf Irish Junipers. Messrs. D. Stewart and Son used Erica Veitchii, Scillas, Chionodoxas and Fritillaria Meleagris in their rock garden exhibit.

At the end of one of the tables, Messrs. M. Prichard and Sons had a well-arranged exhibit which included Saxifraga Delia, S. Mrs. Leng, S. Irvingii. S. R. V. Prichard, several good double-flowered Primroses and bushes of Viburnum Carlesii. Messrs. Pulham and Son had a small sandstone rockery planted with Veronica Hectori, various Saxifrages, Primula Juliana and Erica carnea.

A boldly arranged rock garden exhibited by Messrs. W. Cutbush and Son filled the corner space by the Tea Annexe, and they set, at the back, Pyruses, Wistarias, Ghent Azaleas and Kalmias, while in the front were planted many Kurume Azaleas. Messrs. Bakers, Ltd., planted good batches of Primula denticulata varieties, Iris reticulata and other alpines. Messrs. J. Cheal and Sons had Saxifrages, Morisias and Aubrietias, while Messrs. W. H. Rogers and Son displayed Grevillea sulphurea, Pieris japonica, Soldanella alpina, Saxifrages and a pretty pink double Daisy named Alice.

A large collection of Primroses was arranged by Mr. G. W. Miller whose double-flowered varieties included the double white, lilac and Arthur Dumolin, of purple colour, and he also showed a good selection of singles. Messrs. W. Wood and Son staged Azalea Hinomanyo, and A. Hatsugiri of the Japanese varieties. Messrs. Hodgsons, Ltd., showed Primulas, Muscari, Saxifrages, Wistarias and Viburnum Carlesii.

In a well-arranged exhibit, Mr. F. G. Wood planted good breadths of Primula altaica, Arabis aubrietioides Rosabelle, Primula marginata, Fritillaria armena, Iris pumila cyanea and other serviceable plants. In their exhibit, Messrs. Waterer, Sons and Crisp showed Rhododendron Waterer's caucasicum, R. Handsworth White, R. Nobleanum and various alpines. Mrs. Bucknall had a showy exhibit of Anemones, chiefly of the "De Caen" type.

In the Orchid Annexe, Miss Gladys House had a collection of miniature gardens.

Narcissus and Tulip Committee.

Present: Mr. G. W. Leak (in the chair), Mr. P. R. Barr, Mr. H. G. Hawker, Mr. W. B. Cranfield, Mr. H. Smith, Mr F. H. Chapman, Mr. C. H. Curtis, Mr. A. W. White, Sir Daniel Hall, Mr. J. de Graaff, Mr. J. D. Pearson, Miss E. Willmott, Mr. C. W. Needham, Mr. W. Poupart, Mr. F. A. Secrett and Mr. A. Simmonds Secretary.

AWARD OF MERIT.

Narcissus Zionist.—A well-shaped Narcissus of the Trumpet section, of firm texture. The spreading perianth segments are clear creamy-primrose in colour, the rather slender trumpet, with a reflexed and frilled margin, being of a richer tone. The flower is borne on a tall, stout stem, while the foliage is firm and handsome. Shown by Mr. J. L. Richardson.

GROUPS.

Tulips and Narcissi were a prominent feature at this meeting, the exhibits displaying a high standard of quality.

Near the main entrance to the Hall was a magnificent array of Tulips, arranged by Messrs. Sutton and Sons. Over a groundwork of Tulips, that included beautiful beds of White Hawk, Cardinal Rampolo, Duchess de Parma, Pink Beauty, Proserpine, Fabiola, Enchantress and Augusta, towered large, moss-filled baskets containing such choice varieties as Princess Juliana, Red Admiral, Moonbeam, Ibis, Rising Sun, Flamingo, Couleur de Cardinal, Madame Gevers, Cramoise Royal and Thomas Moore. Pride of place was given to a magnificent basket of General de Wet, while there were numerous small bowls containing, amongst others, the large-flowered President Cleveland, the double-flowered Orange Globe, and Vermilion Brilliant.

Another attractive group, staged by Messrs. R. H. Bath, Ltd., consisted of bowls of Tulips, The most striking variety in this collection was Le Rêve, while there were also fine blooms of Moralis, Zulu, Ariadne, the distinct Mrs. Moon, Bronze Queen, and The International.

Messrs. R. and G. Cuthbert, Ltd., staged a small but very attractive group of pot-grown Tulips, that were shown to advantage by a groundwork of Ferns. The centre of this display consisted of fine blooms of La Rêve, Prince of Austria and General de Wet, and these were surrounded by Cerise Gris de Lin, La Remarquable, Rose Aplatie, Diana and Potter.

A small mixed collection, composed of Narcissi, Tulips and Hyacinths, was arranged by Messrs. G. W. Miller. Of Tulips, there were showy vases of several double-flowered varieties, the most attractive of which were Schoonard, Vuurbaak, Tournesol and Peach Blossom. Narcissi included a new variety, raised by Mr. Mr. W. Welchman, named Lord Lister. It is a beautiful Trumpet Daffodil, with a rich cream trumpet and a lighter coloured perianth. Also shown in this group were N. Victoria, N. Purity, N. Bedouin, N. Bonfire and N. Elvira.

Messrs. Barr and Sons displayed a large and tastefully arranged exhibit of Narcissi. Of the Trumpet type there were wonderful specimens of the giant, golden Warwick, Chelso, Fantin Latour, Great Dane, Xenophon, Siegfried, and Princess Juliana; and of the cream-coloured varieties there were the large, frilled Sweet Adare, St. Hywin, St. Hilda, the exquisite White Nile, Basilia, and the long-trumpeted Peter Barr. Included among the Incomparabilis varieties were the richly-coloured Croesus, Red Tartan and Sesotris; while of double-flowered varieties there were the highly-coloured Twink, Golden Rose, Argent and Dubloon. The blooms of the bicolor Trumpet N. Watteau were especially striking, as also were those of Alice Knights, Royal Gold, the N. Poetaz Orange Cup, Sycamore and Triumph.

Messrs. Seymour Cobley, Ltd., are to be congratulated for the originality displayed in the arrangement of their exhibit, which consisted of large bowls of separate varieties, a pleasing diversion from the stereotype method of displaying Narcissi in erect, few-flowered vases. The large bowls of Falstaff, Weardale Perfection, King Alfred, and the cream-coloured Empire were seen to advantage against the black velvet background, while other striking varieties were Sunrise, Robespierre, Flame, the dainty Osprey, Croesus and Courtrai. There were also fine groups of N. ornatus maximus, Horace, Prelude, Glory of Lisse and Firetail.

Mr. J. L. Richardson arranged a small group composed of a number of choice varieties, of which, among the Trumpet type, the most striking were Golden Chariot, Aves, King Max, and Goldbeater. Fortune, an extremely richly-coloured variety, occupied the central position, and was surrounded by the striking Medusa.

Adjoining this group was a showy display, staged by Messrs. J. R. Pearson and Sons, Ltd., consisting of vases of innumerable varieties, the most attractive of which were Tresserve, Empire, Potentate, Brilliancy, Victoria, Marsh, light, Nursemaid and Phantasy.

Messrs. D. Stewart and Son displayed a small group of various Narcissi of fine quality, the most showy being Great Warley, the double Primrose Phoenix, Flamed Crown, Blazing Star and Milk and Honey, the last named being a double-flowered variety of the Incomparabilis section, white, with a rich lemon-yellow centre.

Fruit and Vegetable Committee.

Present: Mr. W. Poupart (in the chair), Mr. G. Tinley, Mr. H. S. Rivers, Mr. P. C. Veitch, Mr. A. Bullock, Mr. R. W. Hall, Mr. E. Neal. Mr. W. F. Giles, Mr. F. Jordan, Mr. E. Beckett, Mr. A. Poupart, Mr. H. Markham, Mr. W. H. Divers, Mr. P. A. Tuckett and Mr. A. N. Rawes, Secretary.

GROUP.

A magnificent collection of Apples was shown by Mr. J. C. Allgrove, the condition and colouring of the fruits well demonstrating the possibilities of storing Apples over a long period. There were large baskets of Annie Elizabeth, Lane's Prince Albert, Hoary Morning, Cox's Orange Pippin, Lord Derby, King of Tompkin's County, Rival, Cox's Pomona and Newtown Wonder; and smaller baskets of Crawley Beauty, Lemon Pippin, Calville des Femmes, Charles Ross, Belle de Boskoop, Gascoyne's Seedling, Ribston Pippin, Rosemary Russet, Beaumann's Red Reinette, The Queen and Wagener. These merely represent a small selection from this excellent display, which contained in all seventy-seven varieties.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

The Annual Meeting of the United Horticultural Benefit and Provident Society was held at the Royal Horticultural Society's Hall, Vincent Square, Westminster, on March 12, at 7.30 p.m., when Mr. C. H. Curtis presided over a rather larger attendance than is usual.

After the minutes of the previous Annual Meeting were read and confirmed, the Chairman read the Report of the Committee for 1927, the chief items of which were as follows :—

EXTRACTS FROM THE REPORT.

As certain hopes expressed a year ago have been fulfilled, the Committee finds a peculiar pleasure in presenting its record of work accomplished during 1927—the sixty-second year of the Society's existence. The general business of the Committee continues to increase, but the added duties are accepted cheerfully, because they mean additional helpfulness to members. The membership of the Society increases steadily, and the policy of advertising the benefits obtainable by membership has proved a wise one. During the year under review the Society lost an old and valued member—Mr. S. Summers—who did fine missionary work on behalf of the Society, and was for many years a member of the Committee. His death reduces the number of stalwart members who late in the past and early in the present centuries helped to bring the Society to its present excellent position. A pleasing item in the record of the year was the recognition of the able services rendered by Mr. Charles Harding over a long period of years. Mr. Harding holds the record for long service as a member of the Committee, and on July 4 he was presented with an Oak writing desk, while Mrs. Harding received a handbag. The presentations were made on the occasion of a little dinner given to Mr. and Mrs. Harding at the Windsor Castle Hotel. when many members present paid their tribute to Mr. Harding's untiring zeal and wise counsels.

One-hundred-and-two adults and one juvenile were admitted to membership during 1927, as compared with ninety-three in 1926 and ninety-one in 1925. There were twenty-two losses by death or lapsing. The total membership is now 1,909, or sixty-five more than in 1926.

Investments during the year amounted to £2,500, all at five per cent. The total investments now amount to the splendid sum of £74,386. The income for the year was £7,331 8s. 2d., or over £500 more than in 1926, while the total expenditure was £6,404 2s. 8d., or £236 5s. 11d. less than in the previous year. The balance at the end of 1927 was £927 5s. 6d., a sum that would have been reduced had the Trustees found a suitable investment before the books were closed.

The usefulness of the Society is demonstrated by the amount of money the Committee disburses to sick and distressed members. In 1927 £1,224 4s. 3d. was paid out in sick benefit, or £199 5s. 2d. more than in the previous year. Aged, disabled and distressed members received £353 15s. 6d., while the amount susbcribed to the Distress Fund was £263 19s. 1d. The nominees of deceased members received £509 6s. 10d., in addition to funeral benefits amounting to £265. Lapsed members' accounts were met by an expenditure of £204 3s. 10d.—a larger sum than usual; withdrawals from interest on members' deposits account came to £128 9s. 3d., while members over seventy years of age withdrew £627 14s. 2d. from their deposit accounts.

STATE SECTION.

During the year 1927 twenty-seven members transferred their National Insurance to this Society, and forty new members were made. Eleven members died, whilst thirty-nine members have ceased to be insured, leaving a membership of 1,367. Seventy-four members received £445 4s. 6d. in cash grants towards dental treatment. Eight members received £10 7s. 10d. for surgical appliances. Forty-four members received £73 16s. 6d. for optical treatment, making a total for the year of £529 8s. 10d. in cash grants. The Sick Pay for the year amounted to £754 3s. 6d., Disablement to £395 19s. 11d., Maternity Claims to £112 10s. 0d., and Administration Expenses to £207 19s. 7d.

On January 2, 1928, seventy-eight members and their wives became eligible for the pensions at sixty-five years of age of 10s. per week each; these members are not eligible in future to receive sick or disablement pay, but grants towards dental, surgical and optical treatment still apply. Will these members please note that no more stamped cards must be sent to the Society; the responsibility now rests with the employer. who must carry out instructions printed on the Special Cards.

Members still write asking for medical tickets; all communications in respect of these must be made to the local Insurance Committees, and not to the Society.

The Committee desires to thank all who have assisted by introducing new members, by visitation or in other ways, and would remind members that the personal interest of members in the welfare of the Society is the surest method of increasing membership.

The Chairman then moved the adoption of the Report and Statement of Accounts, and that 3,000 copies of it be printed and circulated to the members of the Society. The motion was seconded by Mr. A. Gaskill, and was then accepted by the meeting.

A vote of thanks to the Trustees was then proposed by Mr. Russell and seconded by Mr Brown, Mr. C. H. Curtis thanking the meeting on behalf of the Trustees. The Treasurer, Mr. A. Bedford, was thanked for his untiring services, and Mr. A. E. Cresswell then moved that the members of Committee be re-elected, with the exception of Mr. W. H. Bashford, and that they be accorded the thanks of the meeting for the manner in which they had conducted the affairs of the Society throughout the past year. Mr. T. R. Butler, in replying on behalf of the Committee, referred to the good feeling and enthusiasm that marked the activities of the Committee, and paid high tribute to Mr. C. H. Curtis, the Chairman of the Committee, and to the other Officers. Mr. H. Young was then elected to the Committee in place of Mr. Bashford, retired.

The Auditors were thanked for their past services, and were re-appointed, and a vote of thanks was accorded to the Horticultural Press for the interest taken in the Society.

The Chairman then moved that £200 be transferred from the Surplus Interest Fund to the Advertisement Fund, a motion that received the hearty approval of the meeting.

A motion that the Secretary, Mr. A. C. Hill, receive a salary of £200, together with a bonus of £15 from the extra benefits section, was carried with applause.

The meeting was terminated by a vote of thanks to the Chairman, on the motion of Mr. A. C. Bartlett, who spoke with enthusiasm of the zeal and interest that had marked Mr. C. H. Curtis's many years of service.

SALISBURY AND DISTRICT GARDENERS'.

At the recent meeting of this Society held at the White Hart Hotel, the Secretary stated that he had received a telegram from Mr. F. Cleverley, of Southampton, who was to have given a lecture on "Roses," intimating that he was unfortunately indisposed, and could not possibly fulfil his engagement.

Regrets having been expressed at Mr. Cleverley's indisposition, Mr. W. F. Gullick suggested that the element of disappointment would be removed if the advertised subject, "Roses," were discussed. Mr. C. G. Wyatt, an able rosarian, said he would be pleased to answer any questions on the national flower of England, and a very interesting and helpful discussion then took place, Mr. Wyatt proving a fount of knowledge and answering numerous questions to the satisfaction of all concerned.

At the conclusion, a vote of thanks to Mr. Wyatt, for having so ably filled the gap occasioned by the absence of Mr. Cleverley, was proposed by Mr. W. Asher and seconded by Mr. C. J. Phelps.

Mr. E. **Bennett** exhibited some wonderful trusses of sweetly-scented Rhododendrons, grown at Harnham. Mr. **Baxter**, of Lockerley Hall, exhibited a specimen Cyclamen which was only eighteen months old, in a seven-inch pot, and carried over one hundred buds and flowers.

DERBYSHIRE HORTICULTURAL.

The Annual General Meeting of the Derbyshire Horticultural Association was held at Cavendish Buildings, Derby, Mr. L. Smith presiding over a record attendance of members.

During the past year many new patrons have been added to the lists, including Lord Belper, The Marquis of Hartington, Sir Ian Walker, Sir Wm. Bass, Mrs. A. Florence Stanton, W. G. Player, Esq., and A. Manners, Esq., while ninety new members have also been enrolled.

The balance sheet showed a creditable profit of £127 for the year. Receipts from the Chrysanthemum show showed a forty per cent. increase, reflecting the growing popularity of this exhibition in the midlands.

This year the Association will hold its twenty-first annual show on November 8, 9 and 10, and efforts are being made to make it an outstanding event.

Mr H. T. Ann, was unanimously elected Chairman of the Association; he succeeds the late Mr. J. Martin, who held the position for twenty years; while Miss May Martin was elected a life member to perpetuate her father's memory. Mr. F. Meakin and Mr. W. C. Flanders, retired Secretaries of the Association, were also added to this list.

High tribute was paid to Mr. W. Wardman, a Vice-Chairman of long standing, for the able manner in which he had reorganised the affairs of the Association, and for conducting the secretarial duties after the retirement, through ill-health, of Mr. Flanders.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

At the meeting held on Friday, February 24, the members of Committee present were Messrs. Hy. Astley-Bell (in the chair), J. B. Adamson, A. Burns, B. Collins, A. Coningsby, J. Evans, A. Keeling, G. V. Llewelyn, D. McLeod, W. J. Morgan and H. Arthur (Secretary). Mr. F. B. Cypher was elected to the Awards Committee in place of the late Mr. John Cypher. Mr. J. Thrower was invited to sit with the Committee.

Awards of Merit.

Dendrobium Southport Gem and *Odontoglossum Doreen, Llewelyn's var.*—From G. V. **Llewelyn**, Esq.

Cattleya Octave Doin var. Radiant, and *Brasso-Cattleya Bianca var. Ajax.*—From the Hon. G. E. **Vestey**.

Brasso-Cattleya Success var. George Wall.—From Mrs. **Bruce** and Miss **Wrigley**.

Cultural Certificates.

To Mr. J. **Howes**, for a collection of Lycastes of the Skinneri section, the highest award being granted, and to G. V. **Llewelyn**, Esq., for Odontoglossum Doreen, Llewelyn's var.

Groups.

J. B. **Adamson**, Esq. (gr. Mr. J. Howes), staged a group to which a Gold Medal was awarded. Odontoglossum harvengtense, O. Towneley Grove and Pitt's var., O. Jasper var. Ruby, O. Arachne, O. Doris and O. Llewelyn's var. Black Prince; Odontioda Coronation Haddon House var., O. Margaret, O. Joiceyi var. rubrum and O. Leeanum illustre; Brasso-Cattleya The Baroness var. Margaret, and Lycaste Skinneri in variety, were all well shown.

Mr. **John Evans** was awarded a Gold Medal for a group containing Cymbidium Alexanderi, McBean's var., C. albanense, C. Pauwelsii and C. Vesta; Odontoglossum crispum of the Doin type, O. Princess Mary and O. Pescatorei; Cypripediums in variety; Dendrobium nobile, and Oncidium Cavendishianum.

The Hon. G. E. **Vestey** (gr. Mr. B. Collins), received a Silver-Gilt Medal for a group of Cymbidium Alexanderi in variety, C. Gottianum, C. Auriga, C. Curlew and C. Margarita; Cattleya Octave Doin and Lycaste Skinneri.

Messrs. **Cypher and Sons** were awarded a Silver Medal for a group of various Cymbidiums; Cypripedium Scipio, C. Pyramus, C. Pixie, and many seedlings; Dendrobium nobile elegans and D. Wardianum, and Sophronitis grandiflora.

Messrs. **Keeling and Sons** staged a group to which a Silver Medal was awarded. It contained Cypripedium Lady Dillon, C. Hera, C. Tom Worsley and C. Colin; Odontoglossum Armstrongiae and O. amabile var. Dora; and the rare Coelogyne sparsa.

Mrs. **Bruce** and Miss **Wrigley** staged Brasso-Cattleya Success var. George Wall, an interesting home-raised seedling; and Captain W. **Horridge** (gr. Mr. A. Coningsby), staged interesting plants.

TRADE NOTE.

Messrs. **Foster and Pearson** inform us that following the recent decease of Mr. Douglas Pearson, Mr. Charles Mason—who has for the past twenty years been their senior Director in conjunction with Mr. Pearson—has now been appointed to the position of Managing Director. The firm has been fortunate in securing the services of Mr. Walter Tinker as joint Director; he has had for many years an extensive practical experience in all classes of Central Heating, Ventilation and Hot-water supplies.

Obituary.

George Flemwell.—The many who have derived pleasure from Mr. Flemwell's pictures and his drawings of flowers will learn with regret of his death, which occurred on the 6th inst., at Lugano, where he had lived for some years. Mr. Flemwell was originally a pupil of Mr. W. R. Frith, R.A., and afterwards studied under Professor Rosier at Antwerp, subsequently completing his studies at Nuremberg. At the end of the last and the beginning of the present centuries, he was a regular exhibitor at the Royal Academy, specialising in figure subjects. A visit to Switzerland, however, opened his eyes to the beauty of the mountain scenery and its flora, and thenceforth his life was devoted to the Swiss Alps and their flora. He studied these so industriously and so effectively that he was able to write two most interesting volumes about them, copiously illustrated by his own brush, the first, *Alpine Flowers and Gardens*, in 1910, and the next, *The Flower-Fields of Alpine Switzerland*, the following year. His friend, M. Correvon, wrote a preface to the latter. Mr. Flemwell was also responsible for the plant figures in Mr. H. S. Thompson's *Sub-Alpine Plants of the Swiss Woods and Meadows* (1912). The alpine flowers of France and Switzerland have seldom had a more sympathetic friend or one better able to portray their simple, exquisite beauty and the majesty of their surroundings, than Mr. Flemwell. The Gentian was very near his heart, and his figures of the various species known to him are faithful in every detail.

John Weathers.—The sudden death of Mr. John Weathers, of Isleworth, which occurred on Saturday last, has removed a striking personality from horticultural circles. There will be widespread regret at his early demise—he was not much more than sixty years of age—and even those who did not always appreciate his forcefulness or agree with his extreme views on certain subjects, found plenty to admire and much to envy in him. John Weathers had a very wide, almost unique, knowledge of horticulture and horticultural affairs. He was a clever draughtsman and several of his drawings and many notes from his pen have appeared in the pages of *The Gardeners' Chronicle*. Largely self-educated, he acquired a good working knowledge of botany, French, German and Latin. He was an old Kewite, a personal friend of the late Mr. W. Watson and a great admirer of Kew. During one period of his earlier years he was employed by Messrs. Sanders, St. Albans, and while there obtained an intimate knowledge of Orchids and their importation and export. John Weathers subsequently became Assistant Secretary of the Royal Horticultural Society, a position he filled for many years under the late Rev. W. Wilks. In later life he took up market gardening at Isleworth, and was at one time closely interested in the artificial fertiliser business. He was also for several years Horticultural Lecturer for Middlesex, edited and owned a publication concerned with market gardening, and a local paper entitled *The Isleworth Citizen*, wherein his views on local affairs were expressed in no uncertain fashion. All through his life, John Weathers made and kept copious notes of all he saw and learned, and this habit enabled him to write *A Practical Guide to Garden Plants*, one of the most useful general works on gardening ever published, and a book that could only have been written by a trained observer who carefully indexed his notes. His other works include *A Practical Guide to School, Cottage and Allotment Gardening, Beautiful Flowering Trees and Shrubs for British and Irish Gardens, French Market Gardening, Twentieth Century Gardening, My Garden Book, Beautiful Garden Flowers for Town and Country, Beautiful Roses for Garden and Greenhouse*, and *The Bulb Book. Commercial Gardening*, a useful book in four volumes, was edited and largely written by him. He also edited *The Garden Album and Review*, compiled several of the R.H.S. *Lists of Awards*, and in recent years acted as gardening editor to *The Field*. The now defunct British Gardeners' Association found a hearty supporter in John Weathers, who acted as its Secretary for several years; its activities, however, did not extend so far as he wished, and he was rather impatient of the restraint imposed on him by the Committee. In the Kew Guild he was at once enthusiastic and a severe critic, but his points of view were always arresting. John Weathers did not suffer fools gladly, and his impetuous outspokenness occasionally placed him in an unenviable position. Nevertheless, he was a lovable man, a clever man, and a most industrious man, and in this last respect his life is a fine example to those young gardeners who excuse themselves on the grounds that they have had very few chances. At the R.H.S. meeting on February 28 he appeared to be in his usual good health, and only a few days before his death he gave a lecture on Herbaceous Borders at the Chiswick Public Library, consequently his decease has come as a great shock to his many friends and acquaintances. To his widow, sons, daughters and brothers we offer our sincerest sympathy.

Karl Herzog.—We regret to record the death, at the age of sixty-five, of Herrn Karl Herzog, who was for twenty-three years Superintendent of the world-famous Castle Gardens at Pillnitz, in Germany. After working for some years in the Royal Villa at Strehlen, Dresden, he was given charge of the Japanese Garden in the Palace at Dresden in 1892. Thirteen years later he became head gardener with sole charge of the Pillnitz gardens, where his industry and capability won him the regard of all who knew him.

Carl Reinhardt.—We learn with great regret from the German horticultural press of the death of Carl Reinhardt, who had been since 1900 head gardener and superintendent of the beautiful gardens of Schloss Weesenstein, in the Erzgebirge, Germany. Born in Ballenstedt, in the Harz district, Reinhardt came from a gardening family, and when quite young, showed an aptitude for horticulture. He was for some years employed in the gardens at Pillnitz, Dresden, and was appointed to the charge of Weesenstein, as already stated, in 1900. A terrific storm which occurred in July, 1927, littered the grounds of Weesenstein with a layer of stones and rubbish many feet deep, the little nursery establishment being completely swept away by the tempest. The tremendous labours involved by this unprecedented catastrophe undoubtedly hastened his end, as he was already in poor health and little able to stand a severe strain. He was laid to rest in the beautiful mountain cemetery at Weesenstein, in the presence of the many friends which his excellent qualities and sterling character had gathered around him.

NEW HORTICULTURAL INVENTIONS.

These particulars of new Patents, of interest to readers, have been selected from the Official Journal of Patents, and are published by permission of the Controller of H.M. Stationery Office.

Latest Patent Applications.

4,112—4,113.—Baker, B. H.—Land-rollers, etc. February 9.

3,650.—Bomford, D. R.—Agricultural machines. February 6.

3,954.—Fowler, E. A.—Treatment of soil. February 8.

4,124.—Harvey, L. C.—Fertilisers. February 9.

3,731.—Smith, J. C.—Holders for trees, etc. February 8.

Specifications Published.

284,823.—Barlow A., and Branson, L. H.—Supports for flowers and other articles.

264,171.—Soc. Anon Des Etablissements E. Bauche.—Means for coupling to a tractor two-wheeled vehicles or towed agricultural implements.

284,373.—Godfrey, E. L., and Wrentmore, G. W.—Incubators or like devices for maintaining an equable or adjustable temperature for purposes of incubation or for medical, horticultural, or like purposes.

284,408.—Zellner, H. G.—Process and apparatus for treating fresh fruits and vegetables.

284,430.—Harrison, T. D.—Mowing and reaping machines.

Printed copies of the full Published Specifications may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2., at the uniform price of 1s. each.

Abstract Published.

282,254.—Agricultural ploughs.—Metz, H. Frommershausen, near Cassel, Germany.

Multiple-tool implements, tools.—In a two-share plough for deep cultivation, both shares are arranged at an angle to the line of draught, and the front share works at a greater depth than the rear share, the rear share being curved in vertical section and the front share being substantially flat and vertical and cut away to form a recess, through which passes the soil turned over by the share. The soil is cut in steps, and that cut off by the rear share is deposited upon that cut by the front share. The shares *a*, *b* are attached to a U-shaped frame provided with wheels at the front. The front share *b* is cut away at *b*1.

ANSWERS TO CORRESPONDENTS.

Rushes for Chair-making.—*W. B. L.* The name Ruscus conglomeratus, or rather, the first half of it, was an oversight, probably a printer's error. The name intended was Juncus conglomeratus, one of the common Rushes, which, moreover, is rare in Surrey and Hertfordshire. Even this name came as a surprise for the making of chair-bottoms, because the seats we have seen consisted of the stems of a plant at least twice as thick as those of Juncus conglomeratus when grown under the most favourable conditions as to soil and moisture. What you really meant was the Bullrush (Scirpus lacustris), such as the sample you sent us. This belongs to the Sedge Order (Cyperaceae). The name Bullrush, Reed-mace and Cat's-tail, are also applied to Typha latifolia in books, and that plant also has been used for making chair bottoms, hassocks, mats, baskets, etc., as may be seen in Museum No. 2 at Kew Gardens. Scirpus lacustris appears to have been plentiful in Norfolk, at least some years ago, since, in the same Museum, are samples of baskets, beehive, horse-collar and hassock made from this Boulder or Bullrush (Scirpus lacustris). At one time Scirpus Tabernaemontani, otherwise named S. lacustris sub-species Tabernaemontani, must have been common in Guernsey, for it was used in making pack-saddles for carrying seaweed from the shores. It is closely allied to the specimen received from you. Some years ago we saw Scirpus lacustris in the upper reaches of the Thames, say, above Henley, in quantity, and six to eight feet high, although we cannot state who owned the area. Scirpus lacustris has been recorded from 101 out of 112 counties and vice-counties of Britain, so that there should still be plenty of it in the country, if people would harvest it, and you could get in touch with them.

Water Lost by Plants.—*H. E.* Respiration in plants is a process of breathing; it is merely a slow interchange of gases, namely, the taking in of oxygen and the giving off of carbon-dioxide. No water need be lost in these two processes, because the exchange is so gradual. Plants do give off water during the night after the process of transpiration has ceased. The white line along the edges of the leaves of encrusted Saxifrages consists of lime carried out through the water pores. Large drops of water may often be seen in the morning at the tips of young leaves of Aspidistras, at the tips of the teeth of young Vine leaves, and at the tip of every blade of grass on a dewy morning. This water is given off by special water pores, and serves to relieve root pressure during the night.

Communications Received.—C. M.—R. T.—C. L.—Constant] Reader.—W. J. B.—R. G.—S. McL. B.—A. T. J.—H. M.—J. P.—W. P. W.—V. C.—W. R. J.—J. F.—G. R.—R. A.—M. R.

MARKETS.

COVENT GARDEN, Tuesday, March 13*th*, 1928.

Plants in Pots, etc.: Average Wholesale Prices.

(All 48's except where otherwise stated).

	s. d.	s. d.
Acacia Drummondi, 48's, per doz.	18 0	24 0
Adiantum cuneatum, per doz.	12 0	15 0
—elegans	12 0	15 0
Aralia Sieboldii	9 0	10 0
Araucarias, per doz....	30 0	40 0
Asparagus plumosus	12 0	18 0
—Sprengeri	12 0	18 0
Aspidistra, green	16 0	60 0
Asplenium, doz.	12 0	18 0
—32's	24 0	30 0
—nidus	12 0	15 0
Azaleas, various, 48's, 32's, per doz.	30 0	48 0
— — 60's, per doz.	15 0	21 0
Boronia megastigma, 48's, per doz.	18 0	24 0
Cacti, per tray 12's, 15's	5 0	7 0
Cinerarias	15 0	18 0
Crotons, doz....	30 0	45 0
Crytomiums	10 0	25 0
Cyclamens, 48's, per doz.	15 0	21 0

	s. d.	s. d.
Daffodils, 48's, per doz.	9 0	12 0
Erica melanthera, 48's, per doz.	27 0	30 0
Genistas, 48's, per doz.	15 0	18 0
Hyacinths, 8's, per doz.	18 0	21 0
—60's, per doz.	8 0	9 0
Marguerites, 48's, per doz.	18 0	21 0
Nephrolepis in variety	12 0	18 0
—32's	24 0	36 0
Palms, Kentia	30 0	48 0
—60's	15 0	18 0
Primula malacoides	8 0	10 0
Pteris in variety	10 0	15 0
—large, 60's	5 0	6 0
—small	4 0	5 0
—72's, per tray of 15's	2 6	3 0
Spiraea, white, 48's, per doz.	18 0	21 0
— pink, per doz.	21 0	24 0

Cut Flowers, etc.: Average Wholesale Prices.

	s. d.	s. d.
Adiantum decorum, doz. bun.	15 0	18 0
—cuneatum, per doz. bun.	12 0	15 0
Anemones, St. Brigid, per doz. bun.	4 0	5 0
—fulgens, per doz....	4 0	5 0
Arums (Richardia), per doz. blooms	5 0	7 0
Asparagus plumosus, per bun. long trails	2 6	3 6
—med. sprays	2 0	2 6
short „	—	1 0
—Sprengeri, bun. long sprays	2 0	2 6
med. „	1 0	1 6
short „	0 6	1 9
Azalea, white, per doz. bun.	5 0	6 0
Camellias, 12's or 18's, per box	2 6	3 0
Carnations, per doz. blooms	2 6	4 6
Croton leaves, per doz.	1 9	2 6
Daffodils, per doz. bun.—		
—Emperor	8 0	9 0
—Golden Spur	4 0	5 0
—Princeps	3 0	4 0
—Sir Watkin	5 0	6 0
—King Alfred	8 0	10 0
—Victoria	8 0	9 0
—Barrii conspicuus	4 0	6 0
—Empress	6 0	7 0
Fern, French, per doz. bun.	10 0	12 0
Forget-me-not, per doz. bun.	8 0	10 0
Freesia, white, special, per doz. bun.	12 0	15 0
—ordinary	2 6	3 6
Heather, white, per doz. bun.	—	12 0
Hyacinths, large white, per doz. spikes	3 0	4 0
Iris, blue, per doz. blooms...	3 6	4 6
Lilac, white, per doz. sprays...	6 0	9 0
—mauve, per doz. spikes	6 0	9 0
Lilium longiflorum, long, per bun.	3 0	4 0
— —short, doz. blooms	3 6	4 0

	s. d.	s. d.
Lily-of-the-Valley, per doz. bun.	24 0	30 0
Marigolds, per doz. bun.	3 0	4 0
Myrtle, green, per doz. bun.	1 6	2 0
Narcissus Ornatus, per doz. bun.	5 0	7 0
—Soleil d' Or, per doz. bun.	3 0	4 0
—Grand Primo, per doz. bun.	2 6	3 6
—Elvira, per doz. bun.	8 0	10 0
—Flame, per doz. bun....	8 0	9 0
—Koster, per doz. bun.	5 0	6 0
—Poetaz, per doz. bun.	6 0	7 0
—Choice varieties	9 0	12 0
Orchids, per doz.		
—Cattleyas	21 0	30 0
—Cypripediums	8 0	10 0
Primroses, per doz. bun.	1 6	3 0
Roses, per doz. blooms—		
—Butterfly	6 0	8 0
—Columbia	6 0	9 0
—Golden Ophelia	6 0	8 0
—Richmond	3 0	6 0
—Aaron Ward	5 0	6 0
—Roselandia	6 0	8 0
Smilax, per doz. trails	5 0	6 0
Tulips, per doz. bun.—		
—single, white	18 0	24 0
— — yellow	21 0	27 0
— — red	15 0	18 0
— — pink	18 0	24 0
— — mauve	18 0	24 0
—double varieties	18 0	24 0
—Darwins, pink	18 0	24 0
— — red	18 0	24 0
Violets, per doz. bun.	2 0	4 0
Wallflowers, per doz. bun.	4 6	8 0
French flowers—		
—Allium (Star), per doz. bun.	2 6	3 0
—Anemone, De Caen, doz. bun.	6 0	7 0
— — blue, per doz. bun.	3 0	4 0
— — double pink, per doz. bun....	2 6	3 0
—Marigolds, per doz. bun.	4 0	4 6
—Stock, double white, per doz. bun....	4 0	4 6
—Violets, Parma, double, per bun.	2 0	2 6
— — single, doz. bun....	1 6	3 0

REMARKS.—The most improved lines in the cut flower department are Irises and new crop Roses, the latest arrivals of the latter being Mrs. Aaron Ward, Madame Abel Chatenay and Hoosier Beauty. Daffodils from home-growers are still on the increase and include some very fine blooms of King Alfred and other improved varieties. There are also some fine varieties of Narcissi arriving from Cornwall. Supplies from the Channel Islands have been much heavier during the past week and consist of Daffodils selling at 2s. to 6s. per dozen bunches; Narcissi Grand Primo, White Pearl, Soliel d'Or, Barrii, Ornatus, Backhouse and other newer varieties. Snowdrops are now practically finished but single Violets and Primroses are arriving in very large quantities. Arums (Richardias) and Lilium longiflorum were firmer in price this morning. Lily-of-the Valley is also arriving in a very good condition at the present time, and some very fine spikes of Dutch Hyacinths. Carnations show little change from last week. although higher prices were asked this morning for good quality blooms, All foliage is a trifle more plentiful this week, Smilax being firmer in price, owing to the uncertain arrivals from Guernsey.

Vegetables: Average Wholesale Prices.

	s.d.	s. d.
Asparagus,		
—Lauris	6 0	10 0
—Giant	25 0	30 0
—Sprue	1 6	2 0
—Cavaillon	5 0	5 6
Beans, Madeira, per box.	6 0	8 0
—Guernsey, finest, per lb.	3 0	4 0
—Worthing	2 6	4 0
Beets	5 0	6 0
Brussels Sprouts, ½-bag	3 0	5 0
Cauliflower, French, per crate	6 0	8 0
—Cornish	8 0	12 0
Celery (washed), per doz. fans	1 6	1 9
Cucumbers, doz.	8 0	10 0
Endive, Cornish	2 6	3 0
—French	3 0	4 0

	s.d	s. d.
Leeks, per doz.	2 0	2 6
Lettuce, French, round, per doz.	2 6	3 6
Mint, forced, per doz. bun.	4 0	6 0
Mushrooms—		
—Cups	2 0	3 0
—Broilers	1 6	1 9
Onions—		
—Dutch	13 0	13 6
—Spanish	14 0	18 0
Parsnips, cwt.	5 0	6 0
Potatos—		
—English, cwt.	5 0	8 0
—Guernsey, new, per lb.	0 10	1 0
—Azores, new	25 0	35 0
—Canary	14 0	20 0
Tomato, Canary Islands	16 0	22 6
Turnips, per cwt.	6 0	8 0

Fruit: Average Wholesale Prices.

	s. d.	s. d.
Apples, English—		
—Newton Wonder	6 0	10 0
—Lane's	6 0	10 0
—Bramley's Seedling	8 0	14 0
—Other cookers	4 0	8 0
Apples—		
—Newtowns	14 0	18 0
—Winesaps	13 6	14 6
Apples—Nova Scotian—		
—Baldwin	18 0	24 0
—Stark	18 0	24 0
Bananas	15 0	24 0
Grape Fruit—		
—Blue Goose	35 0	40 0
—Jamaica	27 6	30 0
—Honduras	22 6	30 0
Grapes, English—		
—Colmar	4 6	5 0
Lemons, Messina and Palermo, per case	14 0	27 6
—boxes	11 0	14 0
Oranges, per case—		
—Valencia and Denia, per case	14 0	35 0
—Almeria	18 0	32 6
—Seville	14 0	20 0
—Jaffa	17 0	20 0
Californian Navels	28 6	30 0

	s. d.	s. d.
Strawberries, per lb.	—	—
South African Fruits—		
Grapes—		
—Waltham X	—	—
—Hermitage	6 0	7 0
—Colmar	10 0	15 0
—Molinera	8 0	10 0
—Rosaki	8 0	12 0
—W. Hannepoot	8 0	12 0
—Red Hannepoot	8 0	12 0
Peaches, tray...	4 0	10 0
Pears—		
—Beurré Hardy	7 0	9 0
—Beurré Bosc	4 0	8 0
—Beurré Superfin	4 0	8 0
—Beurré Diel...	3 6	6 0
—Doyenné du Comice, per doz.	8 0	12 0
—Louise Bonne	3 6	6 0
Pines, per case	17 0	32 0
Plums—		
—Kelsey	5 0	10 0

REMARKS.—Until the arrival of the cold spell of weather, business was particularly good. At the time of writing some departments have shown a slackening off in demand, but it cannot be said that the trade generally is other than good for the period of the year. Fruits from South Africa, consisting mainly of Peaches, Grapes and Pears, meet a comparatively good demand and sell well. Fair stocks of imported Apples are on offer and a moderate sprinkling of English Apples, mostly from cold store, are selling well.

Cucumbers are cheaper, the cold weather being an unfavourable factor. Hothouse Beans are in firmer demand and the few hothouse Pears available are making good prices. Forced Potatos from Guernsey are also selling fairly well, and the few cases arriving from the Canary Islands and Azores are meeting a good demand. The Mushroom section has not very much produce to offer, and prices are higher. Broccoli from northern France and Cornwall is selling freely, other greenstuff being rather scarce. Tomatos maintain a steady selling level. Asparagus, mainly from France, is doing well, from a selling point of view. The Potato trade remains unchanged.

GLASGOW.

Prices in the cut flower market showed little or no movement during the past week and no new features developed. Supplies of Tulips and Daffodils were plentiful and values for Tulips were as follows:—Elizabeth, 10d. to 1s.; Le Notre and Rose Tendre, 9d. to 1s.; William Pitt and Van der Hoff, 8d. to 1s.; Tea Rose, 10d.; Bartigon Couronne d'Or and Peach Blossom, 8d. to 10d.; William Copland, 7d. to 10d.; Flamingo, 6d. to 10d.; Prince of Austria, 5d. to 8d.; Murillo, 5d. to 7d.; and La Reine, 4d. to 6d. Daffodils were cheaper; Sir Watkin sold at 2d. to 4d. per bunch; Golden Spur (out-of-door), 2d. to 4d.; others, 4d. to 6d.; King Alfred, from Guernsey, 5d. to 7d.; home-grown, 1s. to 1s. 3d.; Ornatus, 4d. to 6d.; and Princeps, 2d. to 3d. The blue Iris Wedgwood declined to 3s. and 4s. per dozen, but Chrysanthemums were dearer at 2s. to 3s. Lilium longiflorum ranged from 2s. 6d. to 3s. 6d. per bunch; Arums (Richardias), 3s. to 6s. per dozen; Carnations, 2s. to 4s.; Snowdrops, 6d. to 1s.; Lily-of-the-Valley, 2s. to 2s. 6d. per bunch; English Violets, 6d. and Anemones, 5d. to 7d.

Interest in the fruit market largely centred in Valencia Oranges, which, on account of a temporary scarcity, advanced in price from 2s. to 5s. 6d. per case; 300's, 360's and 504's being worth 16s. to 20s. per case; while 240's were 20s. to 26s.; and Jaffa Oranges made 17s. to 20s. for 144's. Florida Grape Fruit sold at 31s. per case. Apple prices reflected no important change, and good business continues to be done in South African fruits; the various prices were for Gros Colmar Grapes, 10s. per box; Bon Chretien Pears, 4s. to 5s.; Plums, 7s. to 8s.; and Peaches, 6s. to 8s.

In the vegetable department Cucumbers declined to 19s. and 14s. per dozen, and Rhubarb to 28s. to 34s. per cwt. Cauliflowers sold at 4s. 6d. to 5s. 6d. per dozen; Lettuce, 3s. 6d. to 4s. 6d.; Madeira Beans, 10s. to 11s. per box; Mushrooms, 2s. per lb., and Teneriffe Tomatos, 24s. to 30s. per bundle.

THE WEATHER IN FEBRUARY.

The succession of excessive rains, and the very stormy west and south-west winds, that had characterised January, continued during most of February. On the 19th a great change occurred and light south-east winds and rainless, but often foggy, weather was afterwards experienced almost continuously. Both periods, however, were very mild, and the month's mean temperature was 43°, or 3½° above the average. There was little frost. Sunshine was recorded on 25 days, and the aggregate duration was 67 hours, or just the normal number. As in January, the afternoons were considerably sunnier than the forenoons. A total of 3·31 inches of rain fell in Hesketh Park, Southport, which implies an excess of 1·17 inch. In curious contrast to January, however, the great bulk of the fall occurred between midnight and 9 a.m., and several afternoon and evening hours were practically rainless throughout the month. By the time the weather changed from wet to dry, the country outside the town had become flooded to a very exceptional extent. The stormy period included gales on seven days, the most severe of which was a whole-gale from the west during the night of February 10 to 11, in which a maximum hour's run of wind of 62 miles was recorded for midnight, with gusts at the rate of 85 miles per hour. Thunder also was experienced on the 10th and 11th. Hail fell on four days. *Joseph Baxendell, Borough Meteorologist, The Fernley Observatory, Southport.*

ENQUIRY.

FALLUGIA PARADOXA.—Will any of your readers give me their experience with Fallugia paradoxa? I have grown a small plant in sandy peat for the last year, but this is evidently not to its taste, and I am now trying a mixture of sandy loam and mortar rubble. This American member of the Rosaceae requires warm, sunny situations. I should be glad to know what success other growers have had with it. *R. C. Jenkinson, Windsor Forest, Berkshire.*

CATALOGUES RECEIVED.

BARR AND SONS, 11, King Street, Covent Garden, W.C.2.—Hardy perennials, rock plants, etc.; Bulbs and tubers.
E. P. DIXON AND SONS, LTD., Hull.—Farm seeds.
R. F. CALVERT, Carnsulan Nurseries, Coverack, Cornwall.—New Daffodils.

Foreign.

PETER HENDERSON AND CO., 35, Cortlandt Street, New York.—Seeds.

FR. DE LAET, Contich, Village-lez-Anvors, Belgium.—Cacti and plants.

H. KOOLBERGEN, Boskoop, Holland.—Rose Europa.

SCHEDULES RECEIVED.

WINDSOR, ETON AND DISTRICT HORTICULTURAL SOCIETY.—Thirty-fifth Exhibition to be held on the Slopes of Windsor Castle, on Saturday, July 7.—Secretary, Mr. J. H. Harding, 1, Sheet Street, Windsor.

LEICESTER ABBEY PARK FLOWER SHOW.—Thirty-ninth show to be held on Tuesday and Wednesday, August 7 and 8.—Secretary, Mr. T. Godfrey, Wholesale Market Chambers, Leicester.

BRIGHTON, HOVE AND SUSSEX HORTICULTURAL SOCIETY—Spring Show to be held on April 11 and 12: Summer Show to be held on July 4 and 5; Autumn Show to be held on November 13, 14 and 15. Secretary, Mr. H. J. Bingham 128, Queen's Park Road, Brighton.

THE
Gardeners' Chronicle
No. 2152.—SATURDAY, MARCH 24, 1928.

CONTENTS.

Alpine garden—
  Eryngium prostratum 208
  Gentiana Lagodechiana 208
  Ranunculus nyssanus 208
Birds and fruit ... 218
Catasetum Christyanum 205
Congress of Entomology 204
Cultural Memoranda—
  Border Carnations... 218
  Watsonias 218
Dominion and Colonial correspondence ... 219
Fires, liability for damage by 219
Flower garden—
  Early-flowering Chrysanthemums ... 210
  Lobelia cardinalis ... 210
Fruit garden—
  Mulberries 219
Fruit garden, the market 216
"Gardeners' Chronicle" seventy-five years ago 205
Garden notes from south-west Scotland 211
Ghent Quinquennial Exhibition 204
Gladioli 204
Hardy flower border—
  Sedum spectabile ... 209
  Verbascum pannosum 209
Ideal gardens and plant lore 212
Indoor plants—
  Centropogon Lucyanus 209
Mesembryanthemum . 215
Mycorrhiza, the rôle of, in plant growth ... 214
Nursery notes—
  Messrs. Sanders, Bruges 216
Orchids 203
Orchids at Kew ... 203
Plants new or noteworthy—
  Rhododendron imberbe 212
Potato disease in Germany 205
Potatos, chemical fertilisers for 218
Primula, the genus ... 208
Propagation, experiments in 203
R.H.S. Hall, opening of the new 203
Rowe, Mr. Walter ... 204
Simar Roto-Tiller, the 219
Snowdrops and Winter Aconites, naturalisation of 215
Societies—
  Cardiff Gardeners'... 220
  General Bulb Growers' of Haarlem ... 220
  Guildford and District Gardeners'... 220
  Manchester and North of England Orchid 220
Vegetable garden—
  Mushrooms ... 219
Violas, a revision of 215
Week's work, the ... 206
Welsh garden, notes from a 210
Wireworms, some notes on 217
Wolverhampton Floral Fête 205

ILLUSTRATIONS.

Cassiope sclaginoides 207
Catasetum Christyanum (?) 211
Click beetles and wireworms 217
Cymbidium Landrail var. Ophir... 205
Eryngium prostratum 208
Rhododendron imberbe 213
Rowe, Mr. Walter, portrait of 204
Verbascum pannosum 200

Supplement Plate.

The Canal Terrace, Bodnant, Taly-Cafn, North Wales.

Average Mean Temperature for the ensuing week deduced from observations during the last fifty years at Greenwich, 44.1

Actual Temperature.—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London, Wednesday, March 21, 10 a.m. Bar. 32.0. Temp. 45°. Weather, Overcast.

Orchids.

The newly-issued *List of Awards* given to Orchids by the Royal Horticultural Society during 1925 and 1926 serves to emphasise the amazing progress made during a comparatively short period by the raisers and cultivators of Orchids. In no other Natural Order has the hybridist been so abundantly successful, and in no other Order have so many distinct genera been successfully mated. We well remember the stir created by John Seden when he flowered the first Brassavola × Cattleya hybrid at Messrs. James Veitch and Sons' nursery at Chelsea. Since then, practically all the genera of the Cattleya group have been interbred until now we have not only Laelio-Cattleya and Brasso-Cattleya, but Brasso-Laelia, Brasso-Laelio-Cattleya, Sophro-Laelia, Sophro-Cattleya and Sophro-Laelio-Cattleya. In addition, we have Potinara, combining Sophro-Laelio-Cattleya and Brasso-Cattleya; Lowiara, combining Brassavola, Laelia and Sophronitis; and Rolfeara, which combines Brassavola, Cattleya and Sophronitis. Scarcely less wonderful is the progress made with Odontoglossums and allied genera. Not so very long ago one Temple Show was rendered famous by the appearance of Odontiodas, which combine Odontoglossums with Cochlioda. To-day, Odontiodas are almost as plentiful as hybrid Odontoglossums, and the latter genus has been combined with Miltonia to produce Odontonia. Vuylstekeara is a combination of Cochlioda, Miltonia and Odontoglossum; Wilsonara carries matters a step further by combining Cochlioda, Odontoglossum and Oncidium, while Burrageara goes one better by combining Oncidium and Odontioda (Oncidioda Cooksoniae) with Odontoglossum and Miltonia (Odontonia Firminii). Our grandparents would have scouted the possibility of successfully crossing many of these genera; even our fathers would have doubted it; indeed, most of us would have been sceptical twenty-five years ago. Who, for instance, would have considered it possible to mate Ada aurantiaca with Odontoglossum Edwardii and produce an Adaglossum; Seden crossed Zygopetalum with Colax and produced Zygocolax, but even this clever raiser could not have foreseen the hybrids of to-day. Other examples of generically-mixed parentage are Adioda (Ada × Cochlioda), Aerido-Vanda (Aerides × Vanda), Angulocaste (Anguloa × Lycaste), Anoectomaria (Anoectochilus × Haemaria), Brasso-Diacrium (Brassavola × Diacrium), Brasso-Epidendrum (Brassavola × Epidendrum), Charleswortheara (Cochlioda × Miltonia × Oncidium), Chondro-Bollea (Bollea × Chondrorhyncha), Chondropetalum (Chondrorhyncha × Zygopetalum), Dia-Cattleya (Cattleya × Diacrium), Dia-Laelia (Diacrium × Laelia), Dia-Laelio-Cattleya (Diacrium × Laelio-Cattleya), Dossinimaria (Dossinia × Haemaria), Epicattleya (Cattleya × Epidendrum), Epidiacrium (Diacrium × Epidendrum), Epilaelia (Epidendrum × Laelia), Epiphronitis (Epidendrum × Sophronitis), Leptolaelia (Laelia × Leptotes), Macomaria (Haemaria × Macodes), Odontocidium (Odontoglossum × Oncidium), Phaio-Cymbidium (Cymbidium × Phaius), Schombo-Cattleya (Cattleya × Schomburgkia), Schombo-Laelia (Laelia × Schomburgkia), Seleno-Cypripedium (Selenipedium × Cypripedium), Zygo-Batemannia (Batemannia × Zygopetalum) and Zygonisia (Aganisia × Zygopetalum). Certain of these generic hybrids are of little value as garden plants, but are interesting botanically, while the wide range of crosses already effected suggests that in the years to come very few genera will retain their race features wholly unaffected by interbreeding with others. At present the Cypripediums have not succumbed to the generic matrimonial intrigues of hybridisers, for the odd cross between Selenipedium and Cypripedium is hardly to be accepted as evidence to the contrary, seeing that these two genera are but branches of a very distinct race. Disa and Phalaenopsis appear to have resisted attempts to marry them to other genera, although there are hybrids within each genus. Coelogynes have also remained true to themselves, as have a few other genera, but the assumed barriers of incompatibility have been broken down so frequently during recent years that it is not safe to presume that any genus will for ever resist the sexual attractions of another. Orchids, once regarded as the perfection of floral evolution and the truest blue-blooded group of plants in the world, are now the most mixed tribe in Flora's realm. This extraordinary mixing of families within the Order has given us many very beautiful garden plants, of which the Brasso-Cattleyas, Odontiodas and Miltoniodas are among the most attractive and popular. In passing, and in conclusion, the wonderful and rapid development of Cymbidiums is worthy of mention. The older Orchid growers remember when C. Lowianum and C. eburneum were the only two species generally grown and great hopes were entertained when these two were crossed. These hopes were not fulfilled entirely, but when C. insigne was introduced and married with the two former and their progeny, and the children were again intermarried, a superb race of handsome, useful and easily-grown plants was produced.

Bodnant.—The Supplementary Plate that accompanies the present issue is a further illustration of Lord and Lady Aberconway's beautiful garden at Bodnant, Taly-Cafn, North Wales, a garden in which the Hon. H. D. McLaren takes a keen personal interest. This garden was described and illustrated in our issue of March 3, pp. 156, 157, 158.

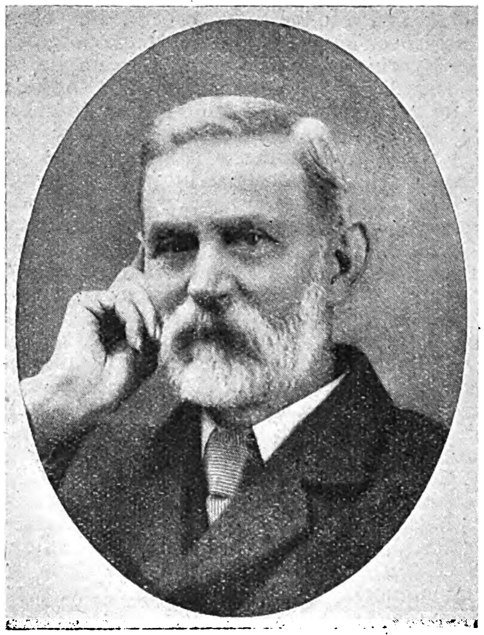
Opening of the New R.H.S. Hall.—We are delighted to learn from the President and Council of the Royal Horticultural Society that H.R.H. Princess Mary Viscountess Lascelles has graciously consented to open the Society's new hall on Tuesday, June 26, at 3 o'clock. Fellows and Associates desirous of attending the ceremony are requested to send in their applications not later than Saturday, May 12, 1928. The accommodation, both sitting and standing, is necessarily limited, and the allotment of tickets will take place by ballot. No individual notice of the opening ceremony will be sent to Fellows.

Orchids at Kew.—An inspection of the Orchid Houses at Kew at this season of the year is not without interest, for there are a number of beautiful subjects that cannot fail to delight. In the section containing Dendrobiums are to be found choice specimens of the delicately shaded D. Luna, D. Ainsworthii splendidissimum grandiflorum, D. infundibulum, with clear, white flowers having orange bands on the lower petals, D. crassinode and D. nobile var. nobilius. Perhaps the most striking plants in this group are D. primulinum, whose growths are furnished with numerous pale lavender, orange-lipped flowers, and D. fimbriatum oculatum. Amongst the Cymbidiums there are fine specimens of C. Kittawake var. Purity, C. Pauwelsii and C. Dryad, whose delicate rose-tinted blooms have lips that are blotched and streaked with rose-purple. There are also flowering plants of C. Erica Sanders the soft-shaded C. Swallow, C. Yellow Hammer and C. Cygnet. Near to these are to be found specimen plants of Dendrobium nobile, D. Findlayanum, D. Cybele and D. Brymerianum, which has small, orange-yellow, chocolate-banded and frilled blooms. Of Odontoglossums there are O. crispo-Harryanum, the small, white-flowered O. pulchellum and O. excellens; there is also a good specimen of Vanda suavis, with two well-flowered sprays of chocolate-spotted, white blooms, the lobes of the lips being deep rose-purple. Epidendrum lanipes, with two branched sprays of innumerable, small, cream-coloured blooms, and well-flowered specimens of Platyclinis glumacea, and its more striking variety valida, all add their quota to the general attractiveness of these houses.

Experiments in Propagation.—The use of chemicals as stimulants for the rooting of cuttings is by no means a new branch of horticultural research work, and during recent years a number of investigators have been dealing with this topic, but the results so far achieved are far from complete from a practical point of view. An article by Mr. Alex Laurie, which recently appeared in an American contemporary, gives an account of an interesting series of experiments that have been carried out at the California Agricultural Experimental Station. The effect of the presence of starch in cuttings was the object of the first series of experiments, the cuttings used being those of several varieties of Grapes. The cuttings were first tested for starch by the immersion of the ends in a 2 per cent. solution of potassium iodide, the discoloration of the tissues indicating the degree to which starch was present. It was found that of those containing a large percentage of starch 62·5 per cent. rooted, and 30 per cent. made vigorous plants; of those with a medium starch content, 35·3 per cent. rooted and 9·3 were vigorous; while of those that were devoid of starch 16·9 per cent. rooted and only 1·8 per cent. were vigorous. This experiment was repeated several times and the results were always in favour of the cuttings which contained a large percentage of starch. The next series of experiments conducted by this Station was in connection with the use of various chemicals as stimulants to root production. Cuttings of Grape vines were again used and these were immersed, to a depth of two inches, in the several solutions for a period of twenty-four hours. The result of this experiment was that in a 1 per cent. solution of potassium permanganate, 100 per cent. rooted; in a ·01 per cent. solution of manganese dioxide, 95 per cent. rooted; in a 100 per cent. solution of manganese sulphate, 100 per cent. rooted; and in a ·001 per cent. solution of potassium ferrocyanide, 95 per cent. rooted. Of those cuttings that were used as a control, and which received no treatment, 30 per cent. produced roots. Mr. Alex Laurie has also conducted personal experiments in the rooting of cuttings of both hard-wooded and soft-wooded plants with the aid of chemical stimulants, and he suggests that the results warrant the assumption that the use of chemicals as incentives to root-production is really justifiable, although he seems to have come to the conclusion that they merely hasten the process, without materially increasing the actual percentage of roots produced.

Ghent Quinquennial Exhibition.—In connection with the Ghent International Exhibition and the annual gathering of the Fédération Horticole Professionnelle Internationale, a very comprehensive programme has been arranged. On Friday, April 20, the judges will meet at the exhibition and be assigned to their various sections ready for commencing business at 10 o'clock. At 12 o'clock there will be a lunch to the judges at the Restaurant of the Casino Royale. At 2 p.m. the Conference of the Fédération Horticole Professionnelle Internationale will be opened by Mr. Charles Pynaert, President; at 5 p.m. there will be a reception at the Hotel de Ville by the Burgomaster of Ghent; at 6 o'clock for 6.15 p.m., Mr. George Monro will entertain the British delegates and exhibitors to dinner at the Hotel de la Poste, and at 8 p.m. the delegates and members of the jury will be invited to attend a gala performance at the Théatre Royale Français. On Saturday, April 21, the King and Queen of the Belgians will open the exhibition at 10 a.m.; the second meeting of the F.H.P.I. will commence at 2 p.m., and the day will conclude with the official banquet of the Floralies at the Royal Casino Restaurant, commencing at 7 p.m. On Sunday, April 22, there is an excursion to Antwerp, leaving the southern station at Ghent by special train at 9 a.m.; the train is due to arrive at Antwerp at 10 a.m., when there will be a reception and a visit to the harbour, followed at 1 p.m. by a lunch offered by the Provincial authorities at the Restaurant Rivierenhof; this will be followed by visits to the Park, to the School of Agriculture, and to the Zoological Gardens, where tea will be provided by the Municipality of Antwerp. The return journey will commence at 6 p.m., and the members of the party will arrive at 7 p.m. in ample time for the banquet of the F.H.P.I., which is fixed for 8 p.m. On Monday, April 23, the members of the jury and the Conference delegates will be received by the Chambre Syndicale des Horticulteurs Belges at 11 o'clock; at 2 p.m., there will be a visit to the Saint Bavon Cathedral, to be followed by a visit to the Chateau des Comptes at 3 o'clock, and one to the Archaeological Museum at 4 o'clock. On Wednesday, April 25, the Comte de Kerchove, Governor of East Flanders and President of the Société Royale d'Agriculture et de Botanique de Gand, and the Comtesse de Kerchove will entertain the members of the jury and delegates at the Palais des Fêtes. There will be a grand gala of the Floralies on Thursday, April 26, and on Sunday, April 29, a grand ball will conclude the proceedings.

Mr. Walter Rowe.—A Herefordshire man by birth, Mr. Walter Rowe has long made his home in Kent, where he has been in charge of the gardens at Squerryes Court, Westerham, for the past twenty-eight years. When fifteen years of age he was apprenticed to Mr. Thomas Ashby, at Moor Park, Shropshire, where he remained for nearly five years, during which time he had, as he says, the great advantage of seeing the whole of the extensive greenhouses re-built and new heating installed. Always keenly observant, young Rowe was as interested in seeing how the construction work was carried out by Messrs. J. Weeks and Co., as in the replanting of the vineries and Peach-houses. For a time, after leaving Moor Park, Mr. Rowe concerned himself with Orchids, and obtained employment with Messrs. Hugh Low and Co., in their Upper Clapton establishment, at a time when this firm had very extensive collections of Orchids. From Upper Clapton he went to Kingsbury House, Shortlands, Kent, in charge of a collection of Orchids which greatly increased, but the owner died suddenly three years later, and the plants were sold. After a time in the nurseries of Messrs. B. S. Williams and Son, at Holloway, when this establishment was famed for its collections of stove and greenhouse plants, Mr. Rowe became plant foreman and decorator under Mr. Jesse Willard, at Holly Lodge, Highgate. It was from the then famous gardens of the Baroness Burdett-Coutts that Mr. Rowe went to Squerryes Court. The gardens had been neglected, so he found scope for his skill and energy, and soon Squerryes Court had a more than local reputation, for he brought the gardens into a state of high cultivation, and effected various improvements, to the great satisfaction of the late Colonel Warde. Formerly, Mr. Rowe achieved considerable success as an exhibitor of fruit, vegetables and Chrysanthemums, but during later years, since the Court has been occupied by Vivian Hugh Smith, Esq., and Lady Sybil Smith, he has had to turn his attention to the production of large quantities of cut flowers and other garden produce. Like other busy men, Mr. Rowe finds time for outside affairs. He has been President of the Westerham Gardeners' Society for twenty-six years, and is also Chairman of Committee of the Westerham Horticultural Society. As the Westerham Gardeners' Society was founded in 1871, it must be one of the oldest in the south of England. For over sixteen years Mr. Rowe, as Local Honorary Secretary, has done yeoman service for the Royal Gardeners' Orphan Fund and, besides helping and cheering various widows and orphans in the county, has collected nearly £300 for the Fund, and is now also a member of the Committee of Management.



MR. WALTER ROWE.

Metropolitan Public Gardens Association.—During the past forty years, the Metropolitan Public Gardens Association has, *inter alia*, endeavoured to brighten the aspect of dull and monotonous streets in poor parts of the metropolis by organising Window Garden Competitions in order to encourage the cultivation of plants, flowers and creepers, outside windows visible from public thoroughfares. The Association provides a judge and makes grants towards prizes to any approved local society, parochial organisation, school, or other responsible body, which undertakes to arrange window garden competitions during the summer months, in accordance with certain simple rules laid down by the Association. The names of new centres and those prepared to act as local organisers thereto, will be welcomed, but in addition, donations to the Window Garden Prize Fund are greatly needed. Since the war the incomes of charitable institutions, such as this Association, have been sadly depleted, although expenses have increased, and contributions, however small, will be acceptable for the object in view. Communications should be addressed to Mr. Basil Holmes, Secretary, Metropolitan Public Gardens Association, Denison House, 296, Vauxhall Bridge Road, S.W.1.

British Mycological Society.—The next meeting of this Society will be held at University College, Gower Street, W.C.1, on Saturday, March 24, 1928, at 11 a.m. Professor E. S. Salmon and Mr. W. M. Ware will describe "Two Downy Mildews of the Nettle," and Dr. E. J. Schwartz and Dr. W. R. Ivimey Cook will discuss the "Life History of a New Species of Olpidium." Dr. W. B. Brierley, Dr. W. Brown, Dr. G. G. Hahn and Dr. H. Wormald will present a symposium on the Nomenclature of "Strains."

Gladioli.—With reference to Mr. G. M. Taylor's remarks in our last issue, we regret that no mention was made of the late Mr. George Mair's work in connection with Gladioli. The fact that the late Mr. Mair was only a rare exhibitor of the flower in London and the south may have been the reason for the oversight. Mr. Mair's varieties were notable for the large number of blooms open at the same time, but they did not appeal to the London public because they were always shown with supports, and nowadays it appears useless to show any flower unless it has sufficient strength of stem to stand alone. In Australia and New Zealand the Mair varieties are grown largely, and "down under" they are undoubtedly developing a strain which, while retaining the main feature of the Scottish strain, has, in addition, greater strength of stem.

Legacies to Gardeners.—The late Mr. C. F. Parr, of Kimpton Grange, Welwyn, who died on January 13, bequeathed £250 to his gardener, Mr. Herbert Catlin.—The late Miss Emily Borton, of The Long Close, Farnham Royal, Buckinghamshire, left £100 to her gardener, Mr. Albert Weare, if still in her service.

Congress of Entomology.—The fourth International Congress of Entomology will be held on August 12 to 18 of this year, at the Cornell University, Ithaca, New York, the President being Dr. L. O. Howard. A programme, to provide for every important section of this science—economic, scientific and educational, is being arranged, and invitations are being extended to foreign governments, through the State Department at Washington, to send delegates. The mornings will, apparently, be confined to the reading of papers of general interest; during the afternoons, sections will deal with specialised subjects, such as taxonomy, morphology, distribution and nomenclature, physiology and genetics, ecology, medical and veterinary entomology, and economic entomology in relation to forest, farm and garden, bees, insecticides and appliances. An all-day visit to the Geneva Experiment Station is being arranged, when demonstrations of spraying by machinery and dusting by aeroplane will be given. After the actual Conference, arrangements are being made for visits to the Niagara Falls, to various entomological museums, and to laboratories of the United States Bureau of Entomology. American entomologists will naturally attend the Congress in large numbers, and it is intimated that Great Britain and other European governments are likely to be well represented.

Catasetum Christyanum.—Although we have not had the opportunity of comparing flowers with the published description, we are persuaded that the unnamed Catasetum exhibited by Messrs. Charlesworth and Co., at Westminster, on March 13, is C. Christyanum. This species was described by Reichenbach, fils, in *The Gardeners' Chronicle* of 1882, p. 588. A further description, accompanied by an illustration, appeared in our issue of November 23, 1895, the drawing being made from a plant exhibited by Messrs. Sanders at a meeting of the Royal Horticultural Society, held on October 29 of that year. The illustration on p. 211 (Fig. 105) is reproduced from a photograph of Messrs. Charlesworth and Co.'s plant. There is also a double-page, coloured illustration of Catasetum Christyanum in the *Bot. Mag.* (t. 8,007, 1905). If these illustrations and the descriptions are compared, we believe our readers will agree that the plant exhibited on March 13 is the rare (and, under cultivation, the sometime lost) C. Christyanum, as suggested on p. 198.

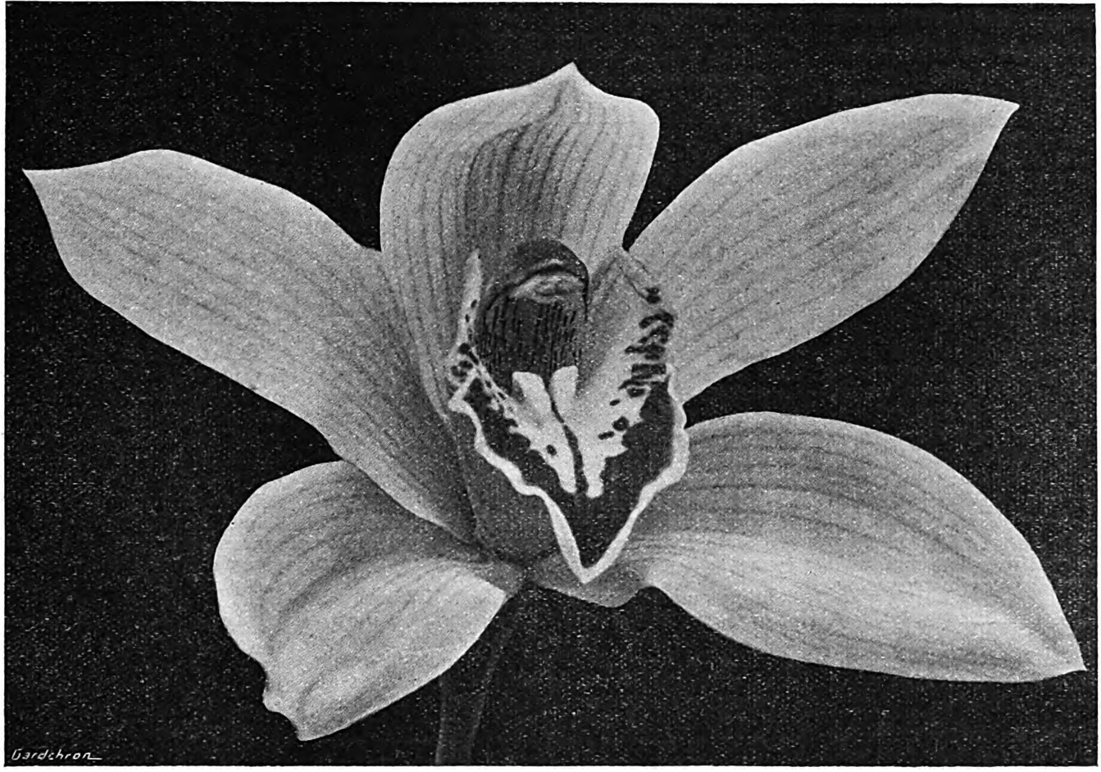


FIG. 101.—CYMBIDIUM LANDRAIL VAR. OPHIR.

R.H.S. Award of Merit, March 13 Flowers buff, suffused with salmon-pink, with brown markings on the lip. Shown by Mr. Robert Paterson, Stonehurst, Ardingly (see p. 198.)

The Wolverhampton Floral Fete.—The management of the Wolverhampton Floral Fête has now been definitely taken over by the Wolverhampton Corporation. In view of this change over, a considerably larger Floral Fête will be possible this year, as a certain amount of money is being granted by the Corporation, and this has enabled the Committee to (1) introduce a number of new classes in their Schedule; (2) considerably increase the prize money offered in various classes; and (3) to afford special facilities to large growers to stage exhibits at this fête. Rose-growers particularly will be interested to learn that the *Express* and *Star* have given a special Silver Challenge Trophy which will be offered for competition this year in addition to the many other trophies which have been offered in the past. The Organising Secretary of the Wolverhampton Floral Fête is Mr. W. J. Maxfield, Town Hall, Wolverhampton.

Forestry Commissioners' Purchase.—We learn that the Forestry Commissioners have purchased about two thousand acres of land on the lower mountain slopes of Plinlimmon, in Monmouthshire, for afforestation purposes.

Potato Disease in Germany.—Stringent regulations are being made in the Wandsbek district of Germany to combat the Wart Disease (Synchytrium endobioticum), of Potatos. Only those varieties are permitted to be cultivated which have received the Certificate of the German plant protection office as being immune and all who wish to sell seed-sets must produce evidence to the effect that they are only of the prescribed varieties, and from plantations which have been inspected by the Chamber of Agriculture, or some similar authority; a certificate to this effect must be produced at the local police office before the sale is permitted to take place. Further, the seller must supply a list of all buyers of his seed-sets, with the names of the varieties sold; in return for this list he receives a voucher, which he retains, and must be ready to show to the police authorities when required, during the whole period of the cultivation of the Potatos.

Appointments for the Ensuing Week.—Tuesday, March 27: Royal Horticultural Society's Committees meet (two days); Royal West Renfrewshire Horticultural Society's Council meeting. Wednesday, March 28: Tamar Valley Commercial Show (two days). Thursday, March 29: Paisley Florists' Society's meeting; Bideford Horticultural Society's meeting; London Gardens Guild Lecture; Linnean Society's meeting. Saturday, March 31: Lancashire Horticultural Association's meeting.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Messrs. Chandler's Nursery, Vauxhall.*—Lovers of Camellias will be glad to learn that the extensive collection of this favourite flower, for which this nursery is celebrated, is now in full bloom. When we state that they form a bank 160 feet in length and some eight or ten feet deep, some idea may be gathered of the kind of entertainment which it may be expected a visit to so large a display will afford. Red kinds, as altheaeflora, Chandlerii, Woodsii, imbricata, elegans, etc., are abundant and fine, and the old double whites have flowered well this year, few of the buds having dropped. Of Carnation striped varieties, Albertus is about the best, the next being, perhaps, Colvilli striata, and the semi-double sort called Tricolor is also very pretty. Among newer kinds may be mentioned Marchioness of Exeter, a fine rose, not very double, but never showing the eye; Reine des Fleurs, beautiful imbricated red; Duchess of Northumberland, white, flaked with pink, and very handsome; Americana, small, delicate pink with a good, round petal; Elata, a small but compact carmine; Teutonia, a medium-sized rose, and very constant, and Henri Favre, a small, but finely-shaped red kind. We may add that, in addition to the treat the Camellias afford, the show house is at present gay with Hyacinths, Narcissi, purple-striped and other Crocuses, Azaleas, Corraeas, Epacrises, Cinerarias, Cyclamens and forced shrubs, among which we remarked Escallonia macrantha, badly coloured for want of bright sunlight, and the pretty white-blossomed Slender Deutzia (D. gracilis). The latter will prove a valuable plant for forcing, requiring about the same treatment as Kalmia glauca, and things of that sort. *Gard. Chron., March* 19, 1853.

Publications Received.—*Handbook and List of Members* of the National Federation of Fruit and Potato Trades' Associations (Incorporated), Limited., Russell Chambers, Covent Garden, W.C.2.—*Farm Notes on Profitable Farming,* Vol. II, No. 3, February, 1928. Nitram, Ltd., 28-30, Grosvenor Gardens, S.W.1.—*Beschrijving en rangschikking van in Nederland Voorkomende Kersen-Vormen,* by I. Rietsema; H. Veenman and Zonen, Wageningen.

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven Moore, Manchester.

Maxillarias.—Some well-known and easily grown species of this genus, such as M. picta, M. grandiflora and M. venusta, bloom during the winter and early spring, the flowers remaining in good condition for a considerable time. When the flowering period is over, any necessary repotting may be done, using well-drained pots, and a good open compost of equal parts Al. fibre, fibrous loam and Sphagnum-moss, adding crushed crocks to keep it porous. These Orchids thrive at the warm end of the cool house; if they are grown in a close atmosphere the leaves soon become spotted. Maxillaria Sanderiana is an attractive species which has a decumbent flower-scape. It should be planted in a Teak-wood basket and grown suspended from the roof.

Zygopetalums.—Some species of this genus, such as Z. Mackayii, Z. crinitum and Z. intermedium, are very similar in habit and requirements. They grow well in a shady position in the intermediate house. Pots are the best receptacles for them, and a compost similar to that advised for Maxillarias will suit them. Z. Gautieri and Z. maxillare should be grown on blocks or rafts, but Z. rostratum requires a higher temperature, and may be given a moist, shady corner in the warm house. A compost of fibre and Sphagnum-moss is suitable for these species. Hybrids derived from the above species, such as Z. Perrenoudii, Z. Sedenii, and the beautiful Z. Brewii, succeed well in the intermediate house if planted in pots or pans. Zygopetalums require moist surroundings, shading from direct sunshine, and copious supplies of water at the roots when growing. As do most of the thick, fleshy-rooted Orchids, they resent disturbance at the roots, therefore repotting should only be done when the plant has overgrown the receptacle or the compost has become exhausted. Thrips should be kept in check by fumigating and spraying, and scale insects may be removed by careful sponging.

THE KITCHEN GARDEN.

By Allan Falconer, Gardener to the Cheadle Royal Mental Hospital, Cheadle, Cheshire.

The Herb Garden.—Chives may now be separated and replanted in a fresh position, and if a few bulbs are planted in boxes and stood in a warm frame, the tops will soon produce a useful supply. Divide and replant any of the herbs which require it, especially the broad-leaved Thyme, and Sage. Seeds of many herbs may be sown either in a border or in boxes. In some districts Parsley is scarce, and seeds sown in boxes will produce an early crop in advance of that from seeds sown out-of-doors. Beds of autumn-sown Parsley should be loosened on the surface and top-dressed.

Chinese Artichokes.—Plant these with a dibber in light, sandy soil which has previously been well manured for some other crop, three inches deep and one foot apart, with fifteen or eighteen inches between the rows; well cultivate between the rows when the Artichokes are growing, and afford water in dry weather. Although Chinese Artichokes are not an important crop, they provide a welcome change.

Salads.—Lettuces, both the Cos and Cabbage types, may be sown outside from now onwards at intervals of ten days or a fortnight, to produce constant supplies. If possible, the seeds should be sown where the plants are to remain, for transplanted Lettuces do not make such good produce as those that are not disturbed. Radishes, if sown every ten days, and kept watered in dry weather, will keep up a regular supply.

White Lisbon Onions.—A bed of these, from seeds sown now, will make a succession to the autumn-sown plants, and will be appreciated for salad purposes when the maincrop becomes too large. A plan adopted by market men, that of mixing Parsley seeds with those of White Lisbon Onion, is a good one; it saves space, the Parsley eventually filling the bed after the removal of the Onions; for some reason these two crops seem to revel in each others company. All beds of autumn-sown Lettuces, Onions and Parsley, if thinned, cultivated and mulched, will soon produce good produce.

Exhibition Carrots.—Seeds of Carrots that are to be grown for exhibition purposes may now be sown in frames, in holes filled with a light compost, such as old pot-Chrysanthemum soil to which has been added some sand and wood-ashes. The holes should be bored about twelve inches apart, and filled with fairly dry soil, which should be pressed firm with a blunt stake. Sow a few seeds in each hole and cover them with a little soil; a dusting of soot and wood-ashes is beneficial after the seeds are sown. Sowing Carrot seeds in frames applies to those districts where it is impossible to get really good exhibition roots by any other method, but prepared holes are essential in all cases where the soil is unsuitable; for the early shows, Carrots can only be produced in this manner.

PLANTS UNDER GLASS.

By J. Coutts, Assistant Curator, Royal Gardens, Kew.

Capsicums.—There are many varieties of Capsicum that are very useful for conservatory decoration during the autumn and early winter months, seeds of which should now be sown in a temperature of 55° to 60°. The young seedlings may be pricked out into boxes, there to remain until they are large enough to be placed singly in small pots. Capsicums demand high cultivation at all stages of their growth, and should be potted on until they are in six-inch or seven-inch pots; and as the season advances they may be gradually accustomed to ordinary greenhouse conditions. They are very subject to attacks of red spider and Begonia mite; both these pests should be carefully guarded against, for they will soon ruin the plants. Apart from their decorative value, the fruit may be used for culinary purposes.

Impatiens Balsamina.—Annual Balsams are very useful for conservatory decoration during the summer months, and a display may be maintained by successional sowings. The first sowing should be made during March, in an intermediate house; sow the seeds very thinly and when the seedlings are large enough to handle, place them singly in small pots, keeping them well down in the pots, for they develop roots from the stems. They should be grown steadily without being checked, and may be repotted as they require it. They grow rapidly, but although they are of easy culture, one seldom sees them really well grown; this, I feel sure, is due to the fact that they are generally grown under too close and warm conditions. During the summer Impatiens Balsamina grows best in cold frames, or in a cool greenhouse.

Gerbera Jamesoni.—This subject, with its many beautiful hybrid forms, may be raised from seeds sown at this time, in a cool greenhouse. The flowers are very useful, when cut, for decorative purposes. The plants require good cultivation, in six- or seven-inch pots, for in comparison with their top growth they have an extensive root system. If they could be planted out in well-drained and raised beds, in a cool greenhouse, I feel sure growers would meet with greater success, and be able to insure an increased supply of flowers. In the south they succeed out-of-doors in well-drained borders at the foot of a warm wall.

Schizostylis coccinea.—The Crimson Flag, or Kaffir Lily, provides a useful supply of cut flowers during autumn and winter, and in the south it may often be seen growing in the open in warm borders. For flowering under glass it is best grown out-of-doors during the summer; towards the end of September it may be lifted and placed in pots or boxes. If to be grown in pots, it should be planted in clumps of such a size as may be lifted and put directly into six- or seven inch pots. During dry weather they may be kept well supplied with water. The beautiful rose-coloured variety known as Mrs. Hegarty is also well worth growing.

HARDY FRUIT GARDEN.

By T. E. Tomalin, Gardener to the Earl of Bessborough, Stansted Park, Emsworth, Sussex.

Big-Bud on Black Currants.—Where this pest prevails, the bushes should now be sprayed with lime sulphur; as the big-bud mite is also probably one of the causes of reversion in Black Currants, it becomes doubly important to combat it in every way possible. In small plantations the enlarged buds may be picked off by hand and burnt before the bushes are sprayed, but on a large scale this is scarcely practicable.

Canker in Apple and Pear Trees.—Pruning and winter-spraying having been completed, time may now be available for a careful examination of the trees for canker, the prompt removal of which may save a valuable branch, or even the life of the tree. All cankered portions should be carefully pared away with a sharp knife. If this is done thoroughly the wound will heal quickly and a new layer of bark will form during the growing season. Young affected trees were so treated, where the canker had almost encircled the stem, and they have now quite outgrown the disease, and make healthy growths each season, the old wounds being quite grown over. This disease is often caused through the roots getting down into an uncongenial sub-soil and the further treatment of lifting and replanting in the following autumn will often prevent a recurrence of the trouble.

The Loganberry.—This popular and useful fruiting subject is not fastidious as to position, so long as sufficient sunlight and air can reach it to ripen both its fruits and the long canes which carry the next season's crop. Its growth is ornamental, and it may be usefully employed to cover unsightly fences, or to furnish rustic arches and pergolas. Newly-planted canes should be cut down close to the ground the first season, to encourage the development of strong growths from the base, which will fruit abundantly the following season. Subsequent treatment is the same as for Raspberries, the old canes being cut out when they have finished fruiting, and the young growths trained in their place. Established plantations require liberal feeding, and should now be well mulched with farmyard manure. As the young growths develop they should be supported quite clear of the fruiting canes, where, fully exposed to sunlight and air, they will make sturdy and well-ripened canes. Although rather coarse and of somewhat harsh flavour when freshly gathered, Loganberries improve out of all knowledge when bottled in a thin syrup, and to be properly appreciated they should be eaten about the following March or April.

FRUITS UNDER GLASS.

By T. Pateman, Gardener to Sir Charles Nall-Cain, Brocket Hall, Hertfordshire.

Plums in Pots.—The trees that have passed out of flower may be syringed overhead on bright days, and if the foliage is attacked by aphis the house may be fumigated with XL All insecticide; it is foolish to allow the foliage to become curled before steps are taken to exterminate this pest. If the aphides are destroyed in the early stages, very little trouble will be experienced later in the season. When the growths are about six inches in length the points of the shoots may be pinched out. Drastic stopping of the shoots is not to be recommended, therefore the operation should be carried out at intervals. From this stage onwards the roots should receive frequent applications of diluted farmyard manure, that may be substituted occasionally by an approved chemical manure that is recommended for fruit culture. No attempt should be made to force the trees;

a free circulation of air should be maintained at all times, avoiding the use of fire-heat so much as possible.

Cherries.—Cherry trees in borders in the cold orchard house will now be in full flower, and it will be necessary to shade the trees from bright sunshine during their flowering period. The shading should be removed when the fruits are set, while it is wise to maintain a current of air through the house both day and night, whenever the outside conditions will permit. On very bright days spray the trees lightly with clear water. With this treatment Cherries growing under glass will be found to set their fruits more freely than if only a brush or a rabbit's tail is used to distribute the pollen.

Strawberries.—Attention should be given to the Strawberry plants that have yet to be forced; with the prevalent drying winds and bright sunshine the soil in the pots will be found to dry out very quickly, and now that growth is active the plants should never lack moisture. If the plants are still packed together in their winter quarters it will be wise to remove them to cold frames, where the necessary attention may be given to them. They may be given a thorough soaking of water at the roots, after which they may be fed regularly with liquid manure, which will help them considerably to develop their fruit trusses. Mildew is often a source of trouble to Strawberries growing under these conditions, and it is advisable to dip all the plants in an approved fungicide.

THE FLOWER GARDEN.

By J. G. Weston, Gardener to the Duke of Devonshire, Chatsworth, Bakewell, Derbyshire.

The Rockery.—The spring being the most important season in the alpine garden, every effort should now be made to keep everything attractive and well-cared-for. After the winter, with its accumulation of dead leaves, sticks and other debris, a general overhauling at this season is very needful. See that the strong-growing subjects are not encroaching on their more delicate neighbours; many choice plants are lost in such an unequal struggle for existence. Where roots have become exposed by the winter rains, a top-dressing of suitable soil should now be given; study the requirements of the individual plants by giving them soil that is most suitable for them.

Cannas.—Where these have been stored under cool and dry conditions during the winter months, they should now be potted up to produce strong, healthy plants for placing out in June. Ordinary potting soil will suit them if it is enriched with some spent Mushroom-bed or other well-decayed manure; some heat is beneficial to start them into growth. When they have made good growth, they should be grown on as sturdily as possible, but they will not thrive under cold and draughty conditions. A frame or light house, where they may be grown in full sun, is suitable for them. On no account should they be allowed to stand long under Vines or Peach trees, for under such conditions they will become drawn and weakly. This is too often the treatment meted out to bedding plants, with the result that when they are planted out they receive a severe check, from which they seldom recover before the season is well advanced.

Pruning Roses.—About this date, but according to the locality and climatic conditions, the annual pruning of Roses should be carried out. As with other garden operations, there are diverse opinions as to the best time for pruning Roses, some even advocating pruning in January. Although under some conditions I have pruned Roses very early, in my experience, generally, I have found March or April pruning to give quite satisfactory results. A knowledge of the habit of growth of the different varieties is essential when pruning is undertaken. In any case, the first step is to cut out all dead or unhealthy wood. This may be followed by removing all the very weak growths and inside shoots, finally pruning back the remaining ones to the degree decided on, which is governed more particularly by the purpose for which the Roses are grown—whether for exhibition, for garden decoration, or to produce quantities of cut blooms. For exhibition Roses, hard pruning back is to be recommended, a limited number of high quality blooms being required rather than a large number of average Roses. Always prune to a bud pointing outwards, this tending to keep the bush open, and thus allowing the whole of the plant to benefit from the maximum amount of sunlight and air. As a general rule, Roses of weak growth should be pruned back fairly hard, the stronger growers being left with rather more buds.

Teas and Hybrid Teas.—If protective material has been used during the winter it must now be cleared away, and the Roses may be pruned, although this is usually deferred until a little later in the season, the local conditions being the best guide as to the exact date. Prune them back well, for the best growths usually start from the base of the plants.

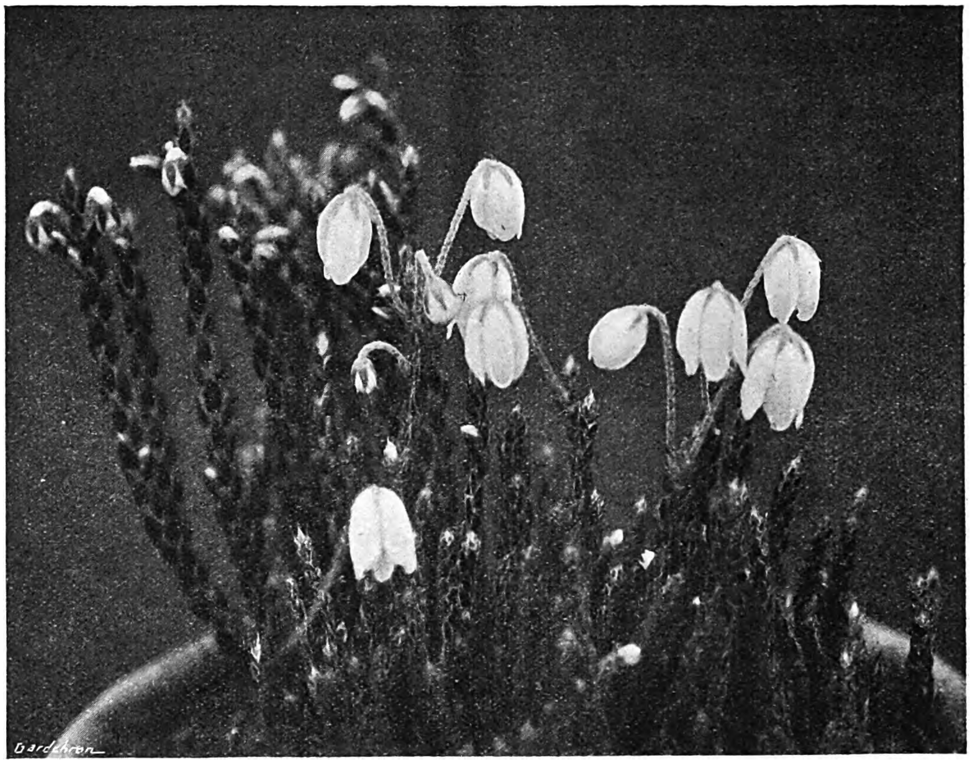


FIG. 102.—CASSIOPE SELAGINOIDES (K.W. 5663).

R.H.S. Award of Merit, March 13. Flowers white. Shown by Lt.-Col. C. R. Messel (gr. Mr. J. Comber), Nymans, Handcross, Sussex (see p. 198).

FOR NORTHERN GARDENERS.

By A. T. Harrison, Gardener at Jordanhill Training Centre, Glasgow.

Fruit Trees in Flower.—Peaches and other fruit trees under glass will now be moving more rapidly, and in order to secure a good set of fruits, the flowers must be fertilised when the pollen is in a dry state. A close inspection of the pollen will show when this work may be performed, and should the natural agents, such as bees, be slow in visiting the flowers, hand fertilising may be resorted to. During last season I found that the bees were not visiting the fruit houses, so, to entice them, some half-filled sections of honey were hung at intervals near the open top-ventilator, with excellent results. The bees were enticed by the honey to visit the trees that were then in flower, and they did so in increasing numbers each day until their work was done. The top ventilator was never entirely closed while this was going on so that the bees had both an entrance and exit always ready.

Half-hardy Annuals.—Many varieties of half-hardy annuals may now be sown under glass to provide supplies of bedding plants for the summer months. These include such favourites as Asters, Stocks, Nemesias, Clarkias and Alyssum, and in raising these a high temperature is unnecessary, as healthier and better plants are obtained by raising them in cool structures. Plants from early sowings of seeds of Antirrhinums, Lobelias, etc., should now be ready for pricking out into boxes of well-prepared compost, and they may be kept growing until large enough to be transferred to cold frames. Antirrhinums may be pricked out about an inch apart each way and before they become crowded, they should be transplanted either into larger boxes or directly into cold frames, where they will make good plants ready for setting out from the middle of May onwards. Dwarf varieties of Lobelias may, however, be pricked out in small clusters which may later be divided and replanted in frames.

Pruning Shrubs.—The pruning of several shrubs should now be performed, and Buddleia variabilis varieties may be cut back to within a few buds of where last season's growth commenced if strong shoots capable of carrying the finest flower spikes are desired, but where space is unlimited, these glorious plants may be allowed to grow in a more natural manner, with the result that innumerable smaller spikes will cover the whole bush. Ceanothus Gloire de Versailles and others of a similar nature, may also be given more latitude where they have plenty of room, with equally good results. Romneya Coulteri should be pruned back to prominent growths, taking out all dead and unhealthy wood at the same time. These are only a few of the autumn-flowering shrubs which may be dealt with at this season; the majority of the early-flowering shrubs require to be pruned immediately after they have produced their annual display.

Melons and Cucumbers.—Where sufficient heat is available to maintain a temperature of 60° to 70°, a sowing of both Melon and Cucumber seeds may be made. So soon as the seeds have germinated, place them in a light position near the glass, taking care to protect them from cold draughts. The soil for potting them must also be warmed by placing it in a similar temperature twenty-four hours before using it. Many methods have been suggested for sowing Melon and Cucumber seeds, but probably the usual one of placing two seeds in a three-inch pot, using moist turfy loam as a compost, and thinning to one plant later, or, if necessary, splitting the ball and repotting each seedling at an early stage, is as expeditious and successful as any.

ALPINE GARDEN.

ERYNGIUM PROSTRATUM.

Very few of the Eryngiums at present in cultivation are suitable for a rock garden, either large or small. With this dearth of pygmies in a race of splendid giants it is a joy to discover E. prostratum, so willing, and more than willing, to render its miniature and altogether charming imitation of the huge, blue Sea Hollies of our borders.

It is a native of the bogs of Texas and according to the late Reginald Farrer, is equally at home in scree or a damp corner. I have never tried the damp corner treatment, for it has flourished so well in a sandstone scree that I have felt no desire to try it elsewhere, yet I feel that I must, for with me it has so far just one blemish on an otherwise spotless reputation, *i.e.*, after a peculiarly floriferous season it is rather inclined to fade away and appear no more; not always, but sufficiently often to incline me to try the other treatment as an experiment.

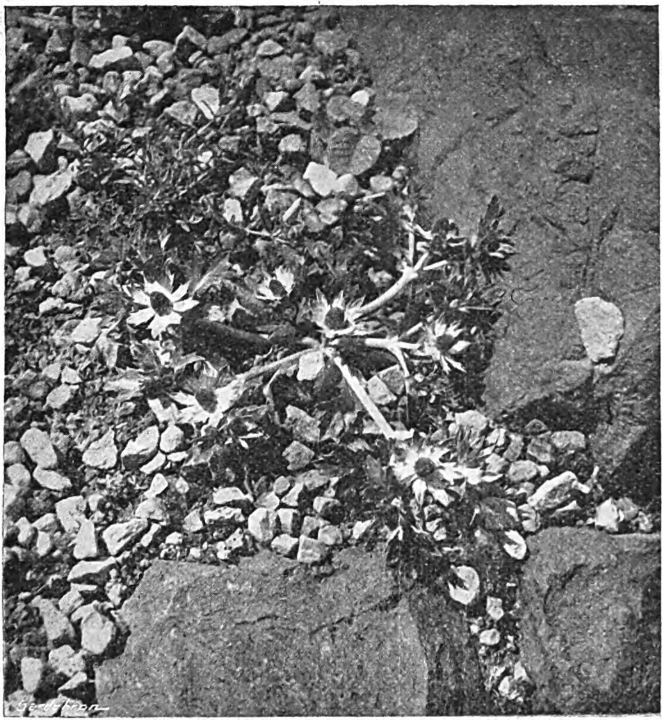


FIG. 103.—ERYNGIUM PROSTRATUM.

It forms a central crown or rosette of narrow, green leaves, slightly notched and quite spineless, from which radiate in orderly manner, prostrate stems, four inches or less in length, bearing flowers and surrounding frills of a beautiful cold, steely blue.

The plant illustrated (Fig. 103) was apparently going ahead well, although it had flowered with utter abandon, when a foul fiend of a rabbit dug it up completely one night and sealed its doom. Rabbits are a terrible pest here, chiefly because of their mischievous tendencies; they will scrape out of the ground, and just nibble at, dozens of plants in which they can have no possible interest, and as for keeping them out—well, we are rapidly coming to the conclusion that if a rabbit really wishes to enter a certain enclosure nothing will keep him out but a gun, and one cannot always be on the spot.

There is one tiny Eryngium that I want—oh, so badly—E. glaciale, which hails from the high Sierras of the Old World. Farrer's description of it is quite entrancing; he wrote, "The neatest, finest and most unfriendly of little thorny tufts, armed in copious spikes of silvery grey, deepening towards shades of blue, with fish-bone spines of ivory glinting as its stems of three to four inches unfold towards the frill and flower."

If any kind person who has this plant will write me, he will be very welcome to anything in my collection in exchange for a specimen. *Will Ingwersen, The Birch, Sharpthorne, Sussex.*

GENTIANA LAGODECHIANA.

The dwarf Gentians are highly appreciated by the lover of alpine plants, the excellent habit of the choicest of them, combined with their fine colouring and, in most cases, a free-flowering habit, constituting a trio of good qualities of high importance in the garden.

Although perhaps slightly eclipsed by the popular G. Farreri and G. sino-ornata, G. Lagodechiana is now gradually making its way into gardens, especially where ease of culture and free production of blooms are desired. It is referred by some to G. septemfida, to which it bears a general resemblance, but it is only about four inches high, and bears numerous clusters of large, blue, open flowers, speckled with white internally, from July to September. Its foliage is quite good and its habit makes it an ideal subject for the rock garden. It may also be used at the front of the herbaceous border, its good constitution enabling it to withstand the conditions well.

G. Lagodechiana is not a lime-lover, but it will grow freely in a good loamy soil, while an annual top-dressing of very old manure, and the addition of a little peat to the soil will help it considerably.

RANUNCULUS NYSSANUS.

"Running" plants are not very popular with owners of rock gardens, and those who have no room for such had better deny Ranunculus nyssanus a place. But there are some positions where quick-growing subjects of such a habit are of value and for these this Crowfoot may well be considered.

It is quite hardy, and has not unattractive, though not too alluring, hairy foliage, from amongst which rise, in early summer, stems carrying the golden-yellow flowers. Its total height when in flower is about twelve inches, if it is growing in a fairly moist position. Grown in drier soil and in a poor, sandy compost, it may only attain six inches in stature.

Ranunculus nyssanus does not rank as a first-class rock plant, but it is not a difficult subject by any means. It may be propagated by removing the runners and planting them in good soil, while it may be said in favour of R. nyssanus that it grows well in either sun or shade, and does not deny us its flowers in the latter. *S. Arnott.*

THE GENUS PRIMULA.

(Continued from page 196.)

Alsophila (Balf. f.). Pale-leaved P.
(Geranioides).

A fragile, dainty species with long, creeping stolons, poorly supplied with roots. The pale green, downy leaves are palmately divided into about seven somewhat acute, coarsely-toothed lobes, with fine hairs on their margins; they are heart-shaped, about one-and-a-quarter-inch long, and the same or more in width, and are borne on slender, hairy stalks, three to four inches long, sheathing at the base. The slender flower stem is sparsely covered with white down and attains a height of about six inches; it bears a cluster of two to three lilac-coloured blossoms about five-eighths-of-an-inch across, with thin, cylindrical tubes about half-an-inch long. The segments of the corolla are obovate, very deeply divided and overlapping. Flowers in June and July. The plant is found in deep moss over decaying vegetable matter, and forms wide patches of verdure mixed with Pyrolas, etc., in the mixed forests around Bei Ling, at 11,000 to 12,000 feet above sea-level.

Culture: A deep, rich Beech and Oak-leaf soil in a damp, shady spot; protection from damp in winter is indicated.

Alta (Balf. f.). Long-stemmed P.
(Denticulata.)

This plant has a very long flower stem and a comparatively small rosette of slightly downy, variable leaves about two-and-a-half-inches long, with oblong, oval or lance-shaped blades, usually broad and rounded at the tip, with entire or slightly toothed margins, tapering to a broadly-winged stalk. Flower stem erect, slender, nine to fifteen inches tall, more or less coated with yellow meal. The flowers are borne in a many-flowered, congested umbel, and are deep purplish-blue, with a yellow eye. The corolla is divided into five obovate lobes which are notched almost to their base. Flowers in February. Grows in moist pasture land on hills north-west of Tengyueh in Yunnan, at 6,000 to 7,000 feet above sea-level.

Culture: Good, rich, gritty loam, in a moist, open spot in the rock garden; it probably needs protection in winter.

Amabilis (Balf. f.). Lovely P.
(Nivales-Pulchella.)

A minute, tufted species with very narrowly spathulate leaves, with blades about five-eighths-of-an-inch long on rather long stalks; their margins are broadly and coarsely toothed, and both surfaces are covered with white meal. The flower stem reaches a height of about one-and-a-half inch, and bears an umbel of two to four deep purple flowers with a grey eye. Flowers in June. It is found on the mountains of the Tsarong-Salween Kiu-chiang Divide in Yunnan, western China.

Culture: As for P. Agleniana.

Ambita (Balf. f.). Scabious-flowered P.
(Sinenses.)

A very quaint yet beautiful species with a head of blossoms bearing a fanciful resemblance to that of a Scabious. The thick leaves are nearly circular in outline, about two-and-a-half inches across, heart-shaped at the base, sparsely downy above, and slightly hairy below; their margins are divided into about seventeen shallow, more or less toothed, blunt lobes; they are borne on stoutish stalks about four inches long, clothed with rusty hairs. Floral bracts broadly oval, pointed, forming a kind of involucra around the blossoms. Flower stem six to twelve inches tall, bearing a congested umbel of pink or pale lilac blossoms. Corolla about half-an-inch across, divided into five oblong or elliptic lobes, with a small tooth at the tip; tube cylindrical, three-eighths-inch long, ringed at the throat. This plant is probably a microform of P. obconica, and is found near To-yao-hien, Yunnan.

Culture: Good fibrous loam and leaf-soil, in a frame or cool greenhouse, is indicated.

AMETHYSTINA (Franch). Amethystine P. (Amethystina.)

A tufted species with a compact rosette of foliage resembling that of the Daisy. Leaves one to one-and-a-half inch long, oblong, pointed, narrowing towards the base, but generally stalkless; margins furnished with saw-like teeth. Flower stems slender, about four inches tall, bearing about three to six amethyst-coloured flowers, in a more or less one-sided umbel, on short stalks. Corolla three-eighths to half-an-inch across, bell- or funnel-shaped, shallowly divided into five oval lobes which have a broad, shallow notch at the tip, and usually a small tooth in the centre; tube quarter of-an-inch long, cylindrical. Flowers in June. Found in moist, grassy and rocky places on the mountains of northern Yunnan and Szechuan, Western China, up to 15,500 feet above sea-level.

Culture: Peat, loam and limestone chips in a moist, open spot, but well-drained in winter; protect with a pane of glass overhead and a cone of Coconut-fibre. (*Pax and Knuth Prim.*, fig. 33.)

AMOENA (Bieb.). Pleasing P. (Vernales.)

Deciduous perennial of tufted habit. Leaves two to four inches long, broadly oblong, blunt, much wrinkled, more or less covered with fine hairs; margins slightly toothed, tapering gradually to a winged stalk. Flower stem four to six inches tall, bearing numerous rosy-purple flowers in a loose umbel. Corolla three-quarters-of-an-inch to one-inch across, segments broad, at times overlapping, slightly bifid at the tip. A native of thin woods in the Caucasus.

Culture: Plant in a fairly moist, half-shady spot in leaf-soil, fibrous loam and sand.

Introduced in 1831, but is very rare in cultivation.

ANDROSACEA (Pax). Androsace-like P. (Monocarpicae.)

This species forms a rather flat rosette and is monocarpic, perishing so soon as it has produced seeds. Leaves half- to one-inch long, oval or elliptic, heart-shaped at the base, usually with pointed margins divided into about eleven triangular lobes; stalks slender, about three-eighths-of-an-inch long, both stalk and blade slightly hairy. Flower stems two to three inches tall, slender, erect, smooth, bearing one or two whorls of rose-coloured flowers of about half-a-dozen to a whorl, on slender stalks. Corolla flat, over three-eighths-of-an-inch across, deeply divided into five broadly oval or wedge-shaped, widely notched lobes; tube stoutish, cylindrical below, funnel-shaped above, three-eighths-of-an-inch long. Flowers in June. Grows in open situations at Mengtze, in Southern Yunnan, Western China, at about 5,000 feet above sea-level.

Culture: Moist, fibrous loam, in sun; not hardy. (*Pax and Knuth Prim.*, fig. 18.)

ANGUSTIFOLIA (Torr.). Narrow-leaved P. (Nivales.)

The foliage of this very small, tufted perennial species is quite free from meal. Leaves half-to one-and-a-half-inch long, including the stalk; narrowly lance-shaped or lance-shaped, entire, blunt, and tapering to a short stalk. Flower stalk half- to one-inch tall, usually bearing one, rarely two, rose-lilac blossoms, with a small pale yellow eye. Corolla half-an-inch to five-eighths-of-an-inch across, divided into five rounded, deeply notched lobes; tube cylindrical, about three-eighths-of-an-inch long, entirely enclosed within the calyx. Flowers in April. Found in damp, rocky places amongst short herbage in the Alpine zones of Mt. Martha, Washington; Long Peak, Pikes Peak, etc., in Colorado and New Mexico, U.S.A., at 12,000 feet above sea-level. The var. Helenae (Pollard and Cockol) differs but minutely from the type.

Culture: Good fibrous loam and limestone chips, in moist, half-shade; protect from wet in winter. (*Annls. Lyc., New York*, 1824, t. 3.) *A. W. Darnell.*

HARDY FLOWER BORDER.

VERBASCUM PANNOSUM.

This striking plant, according to Kew, is synonymous with V. longifolium, whilst Bailey, in his *Standard Cyclopaedia of Gardening*, makes it a doubtful variety of the same plant. Whatever it really may be, so far as nomenclature is concerned, it remains an immensely valuable plant for the back row of the border. The plants illustrated (Fig. 104) have for a background the dark green of a low-growing Holly, whose sombre tints throw into prominence the magnificent spikes of huge, golden-yellow Mullien flowers, which are larger than those of any other Verbascum I have seen; any one of them, picked at random, will cover a five-shilling-piece.

The flowering period extends over several months, the great fault of the plant being one that it shares with most of the Verbascums, namely, the uneven development of the flowers upon the spike; this lengthens the flowering season no doubt, but at the price of a tidy display of blossom. However, this is amply compensated by the glory of those which are open together, and they are not few. It is, like most of its race, a poor perennial, but grows readily from seeds, and will sow itself freely around the parent plant, the resulting youngsters only needing to be thinned out.

The long, blankety foliage is also very handsome, being densely tomentose and a lovely sight in the early morning, when the rising sun glints brightly on the globules of dew clinging to the thick, grey felt which covers the leaves. Truly, the early riser sees many beauties which the sluggard misses. *Will Ingwersen, The Birch, Sharpthorne, Sussex.*

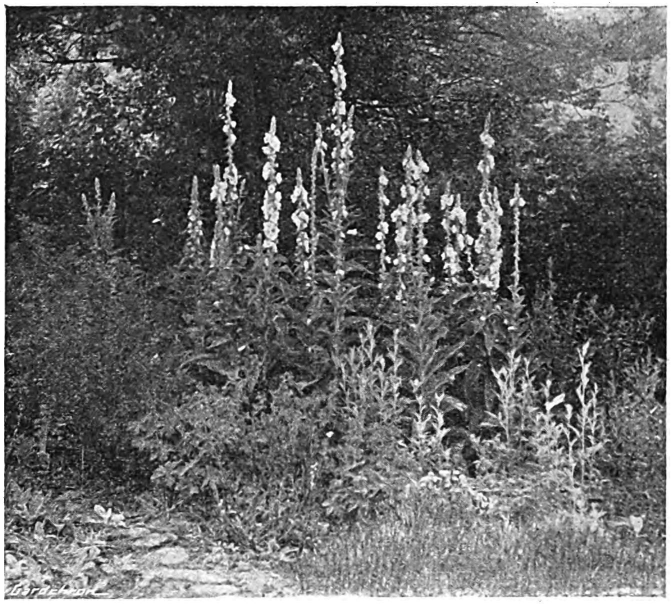


FIG. 104.—VERBASCUM PANNOSUM.

SEDUM SPECTABILE.

This Sedum is a very useful and distinct subject for the front of the herbaceous border, while its varieties roseum, rubrum and album are also deserving of a place. It is quite hardy, and is attractive both in foliage and flower.

Upon attaining a height of from one to two feet, each growth is terminated during the late summer and autumn, by large-clustered heads of flowers, those of the type being rosy-pink. These flowers remain in good condition for a considerable period, in fact, until they are damaged by heavy autumn rains or frosts.

At the approach of winter the plant dies down and remains dormant until the warm days of spring induce it to push up its strong growths again.

Sedum spectabile appears to grow best in a rather heavy soil, and it is readily increased by division of the roots in the spring. *T. H. Everett.*

INDOOR PLANTS.

CENTROPOGON LUCYANUS.

This elegant greenhouse plant is an idea subject for cultivation in hanging baskets. Its long, scandent shoots, clothed with Peach-like leaves, and large, tubular, rosy-scarlet flowers, may be made to completely cover the baskets if the plants are properly planted and trained. The flowers are produced in great abundance during November, when flowers are becoming scarce, so that I can confidently recommend Centropogon Lucyanus as a plant that should be more generally cultivated. Its generic name is derived from the Greek words, *kentron*, meaning a spur, and *pogon*, a beard—referring to the fringed stigma. Its origin is unknown, although it is supposed by some to be a hybrid between C. fastuosus and Siphocampylus betulaefolius.

The present month is the ideal time to commence propagation. Young shoots, about four inches in length, should be removed with a heel attached, and inserted in a finely-sifted compost of equal parts of loam, peat and sand. So soon as the cuttings are inserted they should be well-watered, and after being allowed to drain, the pots should be plunged in a bottom-heated propagator, and covered with a bell-jar. It may be well to emphasise this point about using a bell-jar, because the shoots are apt to become very limp after removal from the parent plant, owing to their tendency to lose a large amount of white latex, therefore the moist atmosphere is necessary to keep them in a fresh condition.

The formation of sufficient roots will take place in a few weeks, when more air may be afforded, and when the root system is sufficiently developed, the young plants should be potted separately, using equal parts of turfy loam and fibrous peat. They may be potted eventually into seven-inch pots and tied up to a central stake, or they may be put into baskets to embellish the greenhouse or conservatory; for this purpose plants in three-inch pots are the best. They should be so arranged in the baskets that a few growths protrude through the sides, in addition to those arranged in the centre.

When they are well rooted they must never be allowed to lack water, and frequent doses of dilute liquid manure should be given, especially when they are coming into flower.

After flowering, water should be gradually withheld, so that during the rest of the winter the compost will always be on the dry side, otherwise the roots will be liable to damp off. After a few weeks' rest they may be restarted into growth, and a fresh batch of cuttings inserted, to provide a batch of plants for the following autumn. *G. F. Gardiner, Botanic Gardens, Bristol.*

FLOWER GARDEN.

LOBELIA CARDINALIS.

This North American plant ranks among our most beautiful border perennials, but, although under favourable conditions and in warmer districts it may survive the winter outside, it is not perfectly hardy in this country, and it is necessary to preserve stocks through the winter under artificial conditions.

While the wintering problem presents no difficulties if the needs of the plant are understood, serious losses often occur through wrong treatment, and probably more plants are lost from trying to winter them under too humid conditions, than from any other cause.

As is well-known, the plant is a moisture-loving subject but it cannot tolerate humid conditions when in a dormant or semi-dormant state, and until renewed activity commences, in the spring, it should be given a light, airy position in a cool house. Little or no water will be needed during the winter, for if the stools are lifted with plenty of the border soil attached to the roots, and are then packed together in shallow boxes, they will generally retain sufficient moisture to carry them through the shortest days.

When signs of growth appear in the spring the stools should be divided and each crown may be planted firmly in good rich soil in other boxes. They may be given moderately warm conditions until they are established, when they should be removed to a cold frame and gradually hardened off until they may be planted in the borders again.

Strains of Lobelia cardinalis vary, and those who possess good stocks of it should adopt this method of propagation, for while propagation from seeds is easy, the resulting plants are not always uniform in colour of foliage, for the high decorative value of the plant is due as much to the intense red colour of its foliage, as to the brilliant scarlet of its flowers. *A. P. C.*

EARLY - FLOWERING CHRYSANTHEMUMS.

The recent articles dealing with these plants, that appeared in *The Gardeners' Chronicle* (pp. 134, 188), lead me to state my opinion of the best early-flowering varieties of this popular garden plant.

During last season, I grew a large number of varieties, and came to the conclusion that those described below were the best. The season was the latest experienced for many years, and I had serious doubts as to whether many of the varieties would bloom at all; those that I enumerate flowered freely, were clean, and suitable alike for border display or as cut blooms.

Ronnie is a beautiful deep yellow, which carries a fine crop of larget, bright blooms that are very satisfactory when cut. It was raised by Mr. Wells, and has come to stay. I found that the plants produced very healthy foliage and that they were strong and sturdy, while a few disbudded plants produced blooms six inches across.

Mayford White, with pure white, incurved blooms of remarkable beauty, produced, when disbudded, flowers quite so large as those of Ronnie. It is a grand Chrysanthemum, either for home decoration or for market purposes, and has been awarded many honours.

Phoenix is a variety with intense cropping propensities, and should prove a most popular Chrysanthemum. The flowers have the formation of those of the old decorative Source d'Or, while the colour is a rich, bronzy-red, and they are produced very early and continuously. This Chrysanthemum is well adapted for vase decoration, the stems being stiff and the flowers well poised.

Hotspur, raised by the late Mr. H. Woolman, has flowers of a bright chestnut-terra-cotta, with a gold reverse, the reflexed petals showing the bright colour to perfection. Its growth is sturdy, and it requires very little staking, the height of the plant being about two-and-a-half feet, making it a splendid subject for the border.

Crimson Circle is one of my favourites; its colour is deep rich crimson, while the reflexed blooms are perfectly formed, and it is most suitable for table embellishment. The sprays are splendid, and when disbudded the flowers are often five or six inches across. It is an ideal Chrysanthemum for pot culture.

Bronze Early Buttercup, with rich bronze-red, and golden-buff reverse flowers, is a splendid cropper and one of the best for growing in borders. The blooms are large and beautifully formed, and under artificial light, for table decoration, will find many admirers. This variety was also raised by the late Mr. H. Woolman, who was very proud of it.

Alex. McAlpine, a fine, stiff-stemmed variety, has rich orange, showy flowers, and is one of the most useful in this class for colour. It has been awarded several honours, and will be greatly in request when better known.

Wembley is a very splendid introduction, the colour of the blooms being a wonderful shade of blood-red-crimson; with disbudding they may be grown to six inches in diameter. I predict a great future for this desirable Chrysanthemum, for it is not only a subject for decorative work, but also makes a fine bushy plant, of striking appearance in the border.

Salmon Queen, with flowers of a fine bright shade of salmon-bronze, is a good cropper, and is well worthy of extended cultivation. The flowers are much brighter if a small dressing of soot and sulphate of iron has been applied to the soil during July; this treatment may be afforded to all the coloured varieties. Salmon Queen, grown under ordinary conditions, proved better than when given very good cultivation, the flowers being borne on stiffer stems.

September White is a magnificent variety producing very large blooms when disbudded; it is a market favourite. The flowers are of a beautiful shape, and as a border plant it is excellent, owing to its splendid cropping qualities.

Nancy Thomas, a bright crimson with gold tips, is splendid for decoration, and a very fine border subject. The growth is full and sturdy; it also makes a very nice pot plant.

Berengaria has flowers of a deep rose-pink, of reflexed form and of large size; they are very useful in sprays and attractive in the border.

Hollicot Yellow is a marvellous cropper, hardy, healthy and free growing, and it deserves a place in every border.

Peter Pan, a dwarf, small-flowered but very floriferous Chrysanthemum, looks well in a mass, the colour being a bright shade of terra-cotta, and it is a prodigious cropper. A bed of Peter Pan, inter-mixed with Gladioli always commands admiration, the plants grow about two feet in height. *G. L.*

NOTES FROM A WELSH GARDEN.

A mild February has been succeeded by dry, cold east-windy weather which is having a salutary effect upon that unseasonably early growth which, here in the west, so often suffers the penalty which awaits precocity. In the second week of March there were frosts of 5° or 6°. These were sufficient to wholly destroy the blossom of Rhododendron praecox, R. Nobleanum and R. ciliatum, but Pieris japonica escaped, and is still carrying a good crop of its charming, pendulous racemes of white flowers. There is abundant promise of a still finer display of blossom on the even more beautiful P. formosa. That these two shrubs should have carried their buds through the disastrous weather of the end of last year is surprising, for there have been occasions when every bud has been shed after much less severe frosts. Are we to conclude that such buds are less susceptible when comparatively young, or is it that they are more easily injured by hoar frosts or those accompanying wet snow? The hard frosts of last December were dry—the "black" variety—and here there was an almost entire absence of snow.

However, losses in other directions are serious enough, for on returning from the south I found that practically the whole of Cistus purpureus, C. ladaniferus immaculatus, C. monspeliensis, Helianthemum ocymoides, H. halimifolium, H. alyssoides and Genista fragrans must be added to the list of "departed" already noted in these columns. It is interesting to record that the comparative hardiness of the prostrate Rosemary and Lithospermum rosmarinifolium previously referred to, has been observed by several correspondents in the west of England, whose experience has been similar to my own. That is to say, while the Rosemary was killed by the 20° to 22° of frost registered, the Lithospermum was scarcely injured at all and is still full of colour. Their practical interest apart, such facts add striking support to the axiom that the relative hardiness of plants cannot always be estimated by the location of their natural habitat, the two species referred to both coming from the Isle of Capri.

A good form of Forsythia suspensa, with every twig ablaze with Daffodil-yellow bells, is a shrub that is not only remarkably handsome in almost any setting, but one that, grown naturally as a bush, blends very harmoniously with the spring effect of the woodland garden. This light and graceful subject, with F. intermedia and F. viridissima to follow in close succession, does very well in the light shade of tall Oaks, and if an Ivy-clad bank or other dark evergreen comes in as a background, so much the better. Also in the shade of deciduous trees are some broad carpets of Polygala Chamaebuxus, both the purple and the white-and-yellow types, which will maintain a quantity of bloom throughout the spring. The Pulmonarias are even more strikingly in evidence in similar places, the fine rich blue of P. azurea Munstead variety, and others, blending very happily with the prevailing yellows of the season. In striking contrast to these, and an excellent woodland plant, is the very robust P. rubra, whose flowers, almost a cinnabar-red, remain the same colour throughout, showing not a trace of the predominant purple of their race.

The dwarf Vincas (V. minor) always prove their value in these early days, and if given a place which they may overrun at will, few things can be more delightful, and few require so little attention. Among the large number of these Vincas the form known as E. A. Bowles is one of the most striking. In this variety the broad, leathery, dark green leaves are very distinct and the flowers, a rich, soft lavender-blue, are nearly as large as those of V. major, the segments of the corolla being wide and overlapping.

Anemone Hepatica is invariably in the vanguard of the forerunners of spring. The white-flowered variety, which naturalises abundantly here, is always the earliest, but it is soon accompanied by the pinks and blues, and that exquisite form of A. angulosa known as lilacina grandiflora. The large, long-stemmed blooms of this beautiful plant, which I believe is one of Mr. Clarence Elliott's discoveries, are a cool lilac-blue, and they are produced with extraordinary abundance throughout the spring. But even A. Hepatica at its best has a rival in A. blanda which flowers equally early, and whose soft blue is most entrancing. Although this is not a shade plant, as the other may be, its broad-rayed blooms, which open only to direct sunlight, last so much longer, and the nodding, closed-up flowers are better able than most to withstand spells of inclement weather. A. b. atrocoerulea and A. b. scythinica are first favourites in this species with me, the former being a deep, full-toned violet-blue, the latter a white-flowered form, the backs of the sepals being purple.

Although the typical Erica carnea and E. darleyensis are above comparison as early-flowering shrubs, that wonderful little variety of the former known as E. c. var. Vivelli is so distinct and striking that it more than holds its own among the earliest Heaths, and in some respects may be considered the best of its species. This unique form, which was introduced by a Dutch nursery firm about three years ago, is very dwarf and compact; the foliage is an intensely deep green and the blossoms a rich carmine-crimson. Another very charming shrub in the rock garden at the time of writing is the graceful Pigmy Cherry, Prunus incisa, whose shell-pink buds and clusters of drooping white flowers are exceedingly cheerful and able to withstand much ill-usage from the weather.

For some weeks an attractive form of Iris unguicularis, at the foot of a retaining wall, has been producing a succession of its lovely, clear, blue-lavender flowers of unusual size, and just above it, in a rocky chink, are the pale lilac blossoms of Primula marginata. This fine old plant, always the first of its set to bloom, might well claim a good place for the beauty of its foliage alone, the clump of mealy, dentated, emerald leaves being singularly charming. P. rosea and P. r. grandiflora, at this season practically have the bog to themselves in so far as blossom is concerned, but, worthy representatives of the genus as they undoubtedly are, they are not more fascinating than some groups of the old double Primroses which flower equally early. What their names are I dare not venture to suggest, but there are whites and yellows, lilacs and crimsons in various degrees of excellence. Here also, in a place given over to these time-honoured heirlooms, are various single Primroses and Cowslips already in bloom, a patch of the sweet little St. Helena Violet, and another of a good ivory-buff form of V. odorata. Daphne Blagayana is pouring a cascade of fragrance over the bank above, in spite of the raw, easterly weather, and there is a good sprinkling of colour among the early bulbs and Saxifrages of the rock graden. *A. T. Johnson, Ro Wen, Conway, North Wales.*

GARDEN NOTES FROM SOUTH-WEST SCOTLAND.

In the multitude of fine flowering shrubs which intrepid collectors have brought home in recent years from the far East, Viburnum fragrans has been assigned high rank, not only for the beauty and fragrance of its flowers, which are produced in mid-winter (it began to bloom here on December 2 last), but because it seems quite indifferent to the vagaries of our British climate, thriving in the open without any coddling. Howbeit, one lives and learns—or ought to learn—and it was not until February of this year that I beheld what this shrub is capable of when trained against a wall. A few years ago a small plant of this species, raised from a cutting, was placed at the foot of a brick wall in Mrs. Callander's interesting garden at Prestonhall, Midlothian. When I saw it last month, it was between eight feet and nine feet high and well-spread. Every one of its slender branches was wreathed nearly its whole length with blossom. Wall space is precious, and should be preserved for choice plants, but none will make more generous return as an occupant thereof than Viburnum fragrans.

Crocus vernus has long been naturalised in various parts of the British Isles, and were it not for the presence of another colonist from southern Europe, to wit, the accursed rabbit, this beautiful flower would by this time have garnished our waysides and woods as lavishly as the blue Hyacinth does three months later. In places where that destructive rodent cannot come this Crocus, once planted, speedily takes possession of the ground. I speak not of the many opulent forms in which Dutch florists have transfigured the wild plant, but of that which perhaps my learned friend, Mr. E. A. Bowles, will sanction my regarding as the type in so valuable a species. Trade catalogues may be searched for it in vain, but it is well-established in many old-fashioned gardens, and it is delightful to find it thronging the enclosure round some Scottish farmhouses.

On Sunday, March 4, the display in the grounds of our parish manse was such as must put to shame mere human achievement in bedding out. Every inch of sward was obliterated by the crowded purple blossoms, wide open in the March sunshine to display their orange stigmas and anthers, and seedlings had scattered themselves here and there over the gravelled drive and paths.

"Crocus vernus," states Mr. Bowles, in his admirable handbook on the genus, "has been a garden favourite for the last three hundred years. It seeds freely, and it is hard to find two seedlings exactly alike." But among the millions round the manse aforesaid it is difficult to detect any difference between individual flowers either in form or colour, except that in the whole multitude I detected two or three white blossoms, just as one finds the like on a floor of blue Hyacinths. (As a faithful Scot, I cannot bring myself to speak of these as "Bluebells," a name which is reserved north of the Tweed for the Harebell).

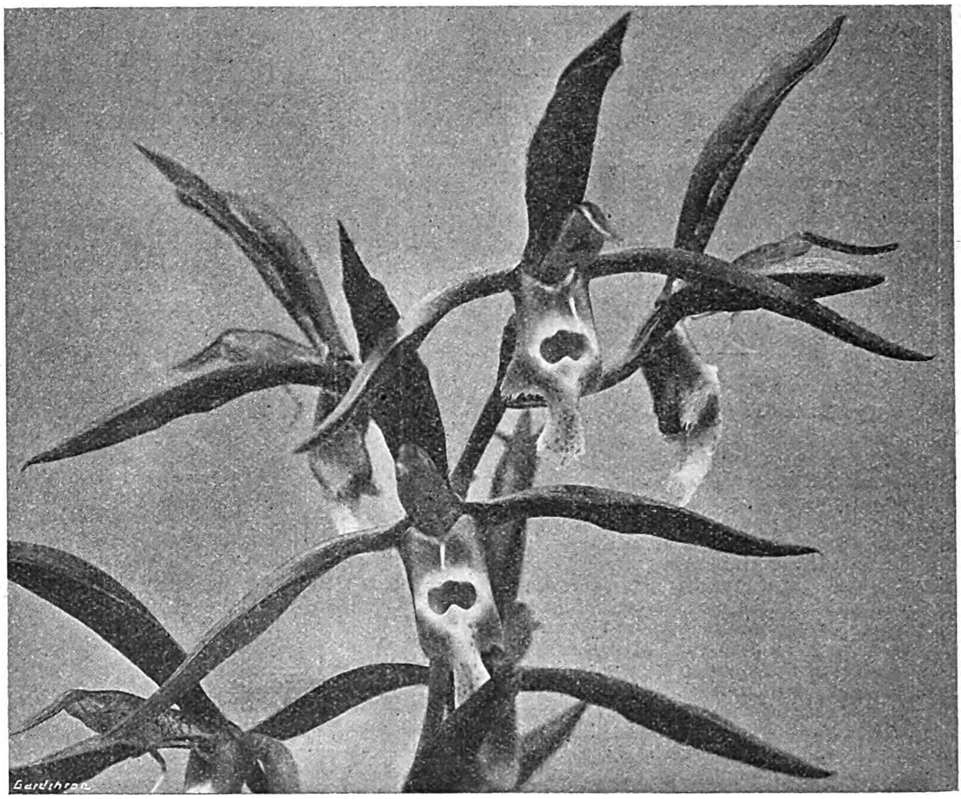


FIG. 105.—CATASETUM CHRISTYANUM (?).

R.H.S. Award of Merit, March 13. Flowers red-brown, green and white. Shown by Messrs. Charlesworth and Co. (see pp. 198, 204).

At the time of writing, March 11, we are wincing under a bitter snap of frost and east wind which has turned to ashes a brilliant display on Rhododendron barbatum and R. fulgens, as well as the gentler glory of R. praecox and R. Nobleanum. Better now than later; for, after all, we have had ten days enjoyment of these early bloomers; many others will follow in due time, and this cold spell serves as a salutary check upon too precocious species.

One satisfactory feature in the season may be noted. Usually the scarlet trusses of R. barbatum have been ruthlessly deflowered by the great, the blue, and the cole tit, allured by the nectar stored in the corollas. This year, throughout winter and spring, so far as it has gone, we have kept a constant supply of Coconuts and monkey nuts suspended at windows for their delectation. So incessantly have these pretty birds been occupied with this provender that it seems they have not cared to go to the woods and shrubland for their accustomed delicacy. Before the frost had defaced R. barbatum I examined many large bushes in full bloom and could find only two trusses that had suffered disfigurement.

It is remarkable that R. barbatum is the only species, so far as I have observed, that offers any attraction to tits. In former years hundreds of trusses have been destroyed on that species, but I have not known tits to touch R. fulgens, R. Thomsoni, R. neriiflorum or R. Shilsoni, although these contain abundant nectar in their scarlet flowers.

Cornus florida well merits the praise bestowed upon it in *The Gardeners' Chronicle* of March 10, p. 173, for it is indeed a beautiful shrub; but the recommendation for planting in this country should be accepted with reserve. Personally, I have never seen a decent specimen in Great Britain, although it is reported as having flowered satisfactorily here and there in the southern counties. But we never can hope to emulate the glory of it as undergrowth in the woods of the eastern United States. Sitting in one of these woods on a May morning with the late Mr. Joseph Choate, who made so many friends in this country during the years that he was United States Ambassador at St. James, I expressed warm admiration of the masses of Cornus florida which filled every glade with wreaths of flower, both white and red, adding how I wished we could grow it in our country. "Well, yes," said Mr. Choate, "it's a pretty thing; but I reckon it's not to be compared to your English May Blossom!"

Cornus Nuttalii, from the western United States, is a far better subject than C. florida for British planters. It is quite as handsome when in flower, although there is no rose-coloured variety such as adds so much to the charm of the other species. The specimens in Kew Gardens are well worth a visit in May. *Herbert Maxwell, Monreith.*

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IDEAL GARDENS AND PLANT LORE.

THE PARADISE OF INDRA.

(*Concluded from p.* 176).

IN the two preceding papers we have dealt with the five trees of Indra's Paradise and the plants which bear his name. We conclude with some remarks on plants of another nature, to which the closing paragraph of our last article leads us. Let me whisper in the ear—Indra was addicted to his cups! What were the plants which yielded the nectar, toddy, wine, amrita or soma, which he in common with his boon companions delighted to quaff? Can we transfer any of these to our ideal garden, and thus make it more pleasing to the eye, while they also add to our store of legend and lore?

From the Sanskrit we learn that the word Soma, the nectar or beverage of the immortals, was so named from the verb *Su*, to beget, because the act of expressing the Soma juice was compared with the act of generating. The juice is said to have been obtained originally from one of the plants known as Sarcostemma, or Asclepias. When we come to look carefully into the matter, however, we find that the whole subject is involved in mystery and difficulty; and this in spite of the fact that many great and learned authorities have spent much time in its investigation. One writer after another informs us that the Soma of the Vedas is no longer known in India. Even so, we are bound to try and discover what it was. From others we learn that the name Soma-vel is still applied in some parts of the country to the Ipomoea, or Moon Creeper, which is found throughout India, and is frequently brought under cultivation. This delightful plant (I. Bona-nox, also known as Calonyction speciosum) is a native of the West Indies, the negroes in America calling it "The Lady of the Night." The flowers open at sunset and close once for all shortly after sunrise, which is exceedingly disappointing, seeing that the long-tubed, white flowers are very fragrant. It is described by Moore as—

> "The midnight flower,
> That scorns the eye of vulgar light,
> Begins to bloom for sons of night,
> And maids who love the moon."

It will certainly make a very agreeable addition to our garden, and although it cannot be claimed as the original Soma plant, its popular Indian name justifies us in its appropriation.

Dr. Haug informs us that the plant used by the priest of the Deccan at the present time is not the Soma of the Vedas, although it appears to belong to the same order. On the hills in the neighbourhood of Poona it grows to the height of some four or five feet in the form of a bush, consisting of a number of shoots all coming from the same root. The stem is solid and the bark of a greyish colour; leaves are wanting, while the sap is white and has a very stringent taste. It is bitter but not sour, and forms a very nasty drink which has some intoxicating effects. From such a description but little is to be learned, and we have, therefore, to look further. We then find that while the Brahmans use one plant, the Parsês employ another. That used by the former is known as Pûtika, or the yellow-seeded Nicker tree (Caesalpinia Bonduc), a plant which belongs to both Indies. This is the Bonduc, or Necklace tree of the Arabs, yielding seeds which are used by the women as beads and by the boys for marbles. The ceremonies connected with the extraction of the juice by present-day Brahmans are fully set forth by Dr. Haug (*Sacred Essays of the Parsês*, 282).

For the production of the sacred drink by the Parsês, branches of a particular shrub which grows in Persia are employed, but of this I have been unable to discover the name, unless it is a species of Periploca. The twigs are bruised in a metal mortar with a pestle, along with those of the Pomegranate, so we may include this also in our garden. As for the Persian plant, we must agree with Professor de Gubernatis that on the one hand we know nothing positively respecting the kind which was originally employed, and on the other that during the Aryan migrations from north to south, the plant has been frequently changed. When the original was no longer to be found another took its place, and thus the number of ambrosial plants has been greatly extended.

The Negundo (Vitex Negundo), to which we have already referred in these papers, seems to have a right to a place here, and that will justify our having already planted it in the garden of Indra. It appears, says Professor de Gubernatis, to possess all the qualities attributed to the Vedic Soma plant, although it is one of the commonest shrubs in most parts of India. The crushed leaves possess a very strong smell, which to some people is disagreeable rather than pleasant. The flowers are in panicles, small, lilac or light blue, and are followed by a black berry the size of a Pea. It bears such significant names as Indrasura, Indrani and Indrahasta, the first of which has been translated *liqueur d'Indra*.

Such distinguished scholars as Benfey and Roth, however, maintain that the true Soma plant of India is an Asclepiad, bearing a variety of names, such as Asclepias acida (syn. Sarcostemma brevistigma) and S. viminale. If we accept the latter (S. viminale) we find a plant which is rich in sap for the manufacture of an intoxicant, and destitute of leaves. As its name implies, it is a creeper or twining plant. The milky juice found in many members of this family is frequently acrid and may be used medicinally. There is one species, however, (Asclepias lactifera) whose sap is so abundant, sweet and wholesome that the natives drink it as we do cow's or goat's milk. Nearly allied to this is the Cow Plant (Gymnema lactiferum), which both yields a nutritious juice, and supplies esculent leaves. On account of this peculiarity of the sap, the plants of this Order are usually known as Milkweeds. But the form named above, while abundant in southern India, appears to be rare, if not quite unknown, in the north, and this would seem to make against its claim to be the true Soma plant.

The difficulties in the way of identifying the plant which yielded the original Soma seems to be well-nigh insuperable. The idea that it must be a Milkweed, or a succulent plant yielding an abundance of sweet sap, is rejected by some writers who would put in a claim for one of the Umbelliferae, or Compositae, which have yielded many of the most highly prized products of Persia and Afghanistan from time immemorial. But what of Grapes and the vine? Some will wonder that this has not been thought of before, and so an end put to all our difficulties. It is a happy thought, and there seems to be no reason why our Indra garden should not have its Grape vine. Grapes and Grape juice are mentioned in early Sanskrit literature, and Grapes are produced to this day in the neighbourhood of Kabul and sent to India for distribution in little wooden boxes. The juice of the Grape would seem to be a much better material from which to make a beverage than that of a Milkweed, and one writer at least has expressed the opinion that "the Vedic culture of the Soma has been applied to the Vine in Persia, Asia Minor and Greece." On this, Sir W. T. Thistelton Dyer remarks that if the Soma cult originated near the sources of the "Oxus," and the Vine was used, its sacred character would be likely to establish itself in the west, while in Hindustan a different result would follow. Here the hot plains were unfavourable to the growth of the Vine, and another plant may have been substituted for it. Succulent plants, however, are rare in the indigenous flora of India. Now between the joint of a Milkweed such as Sarcostemma and an unripe green Grape there is a faint resemblance, if not in form, at least in texture and appearance, and this plant may therefore have been the one chosen on that account.

But we must conclude. In the first place it must be confessed that no botanical description of the Soma plant is to be found in any of the ancient hymns. As the race scattered and the original plant was unavailable, substitutes were permitted, and these varied widely in the different localities to which the Soma cultus spread. Hence our garden may be greatly enriched, although we may not be able to say which of the plants, if either, represents the original. It may be added that any one who is really interested in the matter will find that the Hop, Tamarix and other plants have been included in the list. Professor Max Müller, indeed, collected all the available information on the subject some years ago, and to his article on the Original Home of the Soma (*Biographies of Words*, 1898, p. 222, *et seq.*) the reader may be referred.

Perhaps it was unjust to whisper that Indra was addicted to his cups. It is said in one place that while all other liquors are followed by evil effects, that of the Soma is followed by elevating righteousness. It is always possible to say a good word for the thing we love. The Vine in Jotham's parable asks if it should leave its wine which cheereth God and man, to go and be promoted over the trees. Wherefore we withdraw the unkind suggestion, and leave Indra in the enjoyment of the trees and fruits of his beautiful Paradise. *Hilderic Friend.*

PLANTS NEW OR NOTEWORTHY.

RHODODENDRON IMBERBE.

HUTCHINSON, N. SP.*

SOME years ago, when examining and rearranging the Himalayan specimens of Rhododendron at Kew, I was struck with the difference between true R. barbatum and an imperfect specimen collected by Strachey and Winter-

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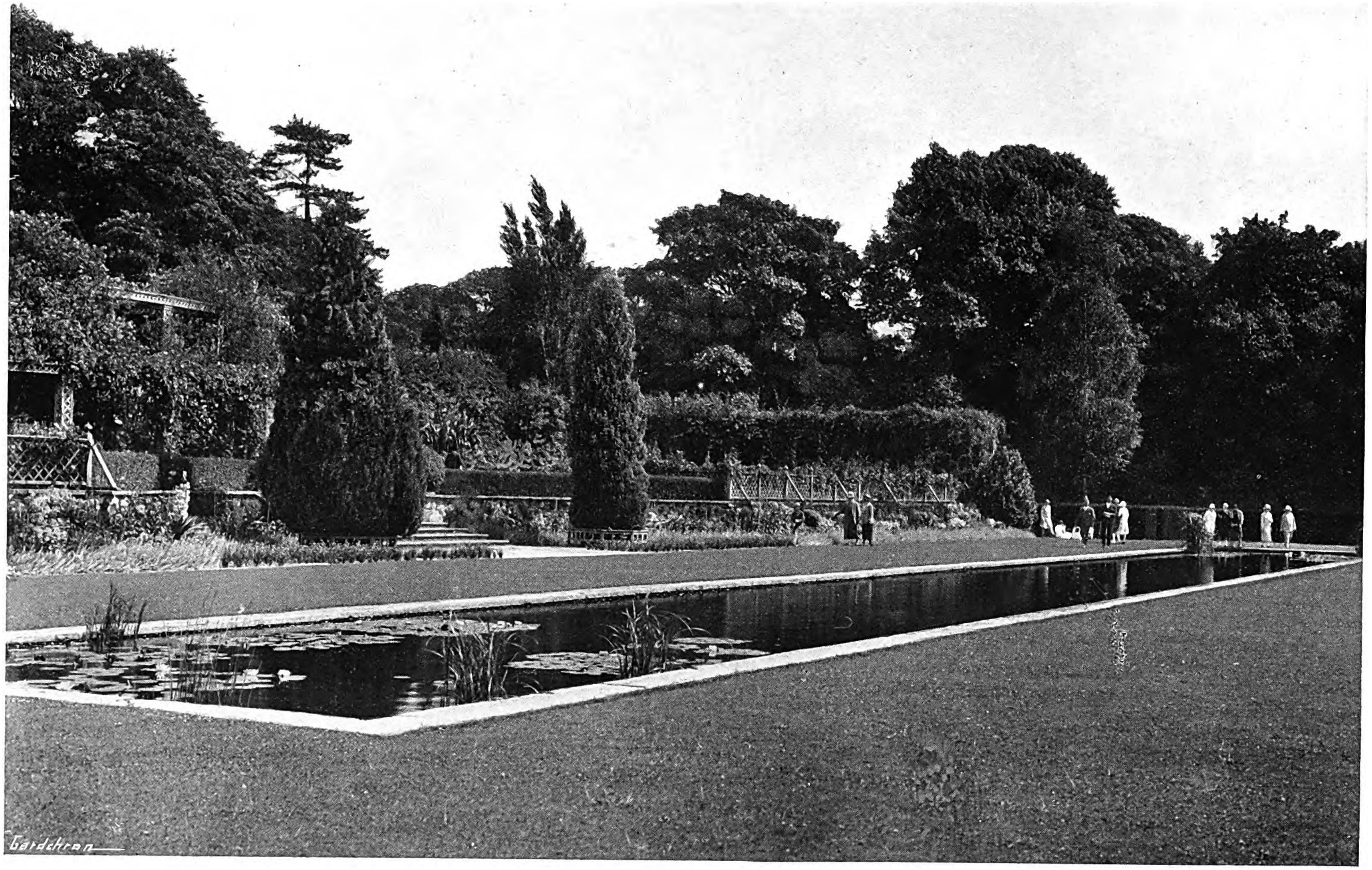
* *Rhododendron imberbe, Hutchinson*, sp. nov., affinis R. barbatae Wall., sed foliis obovato-ellipticis abrupte cuspidato-acuminatis, petiolis omnino imberbibus, calycis lobis ciliatis, corollae-tubo intra lineis carmineis notato differt.

Frutex circiter 2·75 mm. altus; ramuli foliorum delapsorum cicatricibus suboribularibus magnis notati; ramuli hornotini glabri. Folia subverticillata, 4–5-nata, obovato-elliptica, abrupte et satis longe acuminata, basi rotundata vel fere subcordata, 9–12 cm. longa, 4-5 cm. lata, supra atroviridia, infra pallide viridia, glabra, utrinque crebre et graciliter reticulata; costa supra leviter impressa, infra prominens et pallida; nervi laterales utrinsecus circiter 15, a costa sub angulo fere 90° abeuntes, marginem versus multe ramosi; petioli 1·5 c.m. longi, supra leviter sulcati, glabri. Inflorescentia terminalis, breviter racemosa, circiter 15-flora; perulae late ovatae, cuspidatae, extra glabrae, apicem versus intra sericeae; pedicelli 1 cm. longi, glabri, pallide virides. Calyx patelliformis, 5 mm. longus, extra basin disciformum graciliter glanduloso-pilosus; lobi ciliati, late oblongi, pallide viridi-albi, intra basin loborum rubro-tincti. Corolla rubra, late tubulosa, tubo 3 cm. longo inter lobos 5 suborbiculares emarginatos 2 cm. longos et latos lineis carmineis notato. Stamina 10; filamenta alba, inferne pubescentia; antherae 4 mm. longae. Ovarium 8–9-loculare, oblongum, dense papilloso-pubescens et subsetoso-pubescens; stylus staminibus superans, pallide viridibus, glaber.



BODNANT: THE CANAL TERRACE.

bottom at Jhuni, Kumaon, in the West Central Himalaya.

Later, I found that this specimen was apparently identical with a plant then growing in the Himalayan House under the name R. barbatum var., an old plant (probably about thirty years old) which had never been known to flower. A few years ago, owing to overcrowding, this plant was taken out of the house and planted outside in well-prepared soil in the garden of Mr. A. D. Cotton, Keeper of the Herbarium, who watered it well and top-dressed it annually. Early this season it flowered in considerable profusion, and its distinctness from R. barbatum was confirmed. It differs from that species particularly in the absence of bristles from the petioles, in the relatively broader and shorter leaves, which are quite abruptly acuminate, and in the ciliate calyx-lobes and pubescent stamens, besides other minor characters. The plant at Kew is now nearly eight feet high, and the bark of the stem is rough, and is quite different from that of R. barbatum, which is smooth and peels off in large, thin flakes like that of R. ciliicalyx.

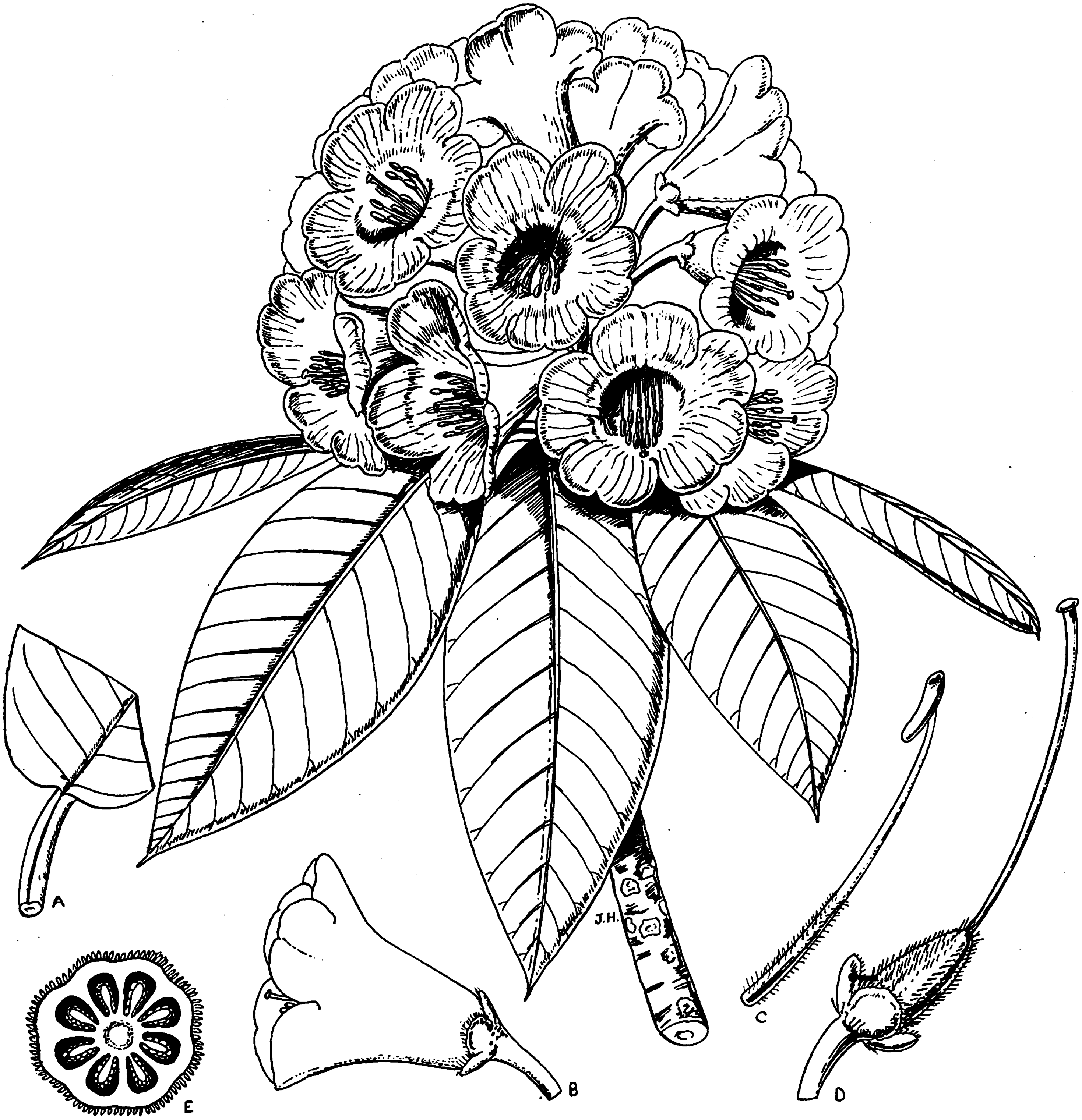


FIG. 106.—RHODODENDRON IMBERBE, HUTCHINSON, N. SP.

Flowers red. A, petiole and base of leaf; B, side view of flower; C, stamen; D, calyx and pistil; E, cross-section of ovary.

Apparently the stimulus engendered by moving the plant from the equable temperature of the Himalayan House to the more rigorous conditions outside, has induced it to flower and thus reveal its quite unexpected interest.

The possibility of it being a hybrid seems to be ruled out owing to the existence of the wild specimen collected by Strachey and Winterbottom in Kumaon. These collectors evidently considered it to be distinct, for in the field they labelled it "R. barbatum? var. imberbis," whilst in their *Catalogue of Plants of Kumaon and Garhwal*, p. 93, they listed it as "R. sp.?" The locality Jhuni is situated at 9,000 feet, and is placed in the column marked as "rainy." Possibly, therefore, the excessively wet summer of 1927 had something to do with its flowering so profusely this early spring. It should also be mentioned that the new growths on the plant were severely injured by frost last April, and short secondary growths were made later, which proved to be flower-buds.

The only other species resembling R. imberbe is the Bhotan R. Shepherdii. The latter has a much larger but not ciliate calyx and quite glabrous filaments.

R. imberbe is a much-branched shrub about 2·75 m. high, with rough bark; branchlets coarsely marked with the large suborbicular scars of the fallen leaves; one-year-old branchlets glabrous. Leaves subverticillate, 4–5 in a whorl, obovate-elliptic, abruptly and fairly long-acuminate, rounded or almost subcordate at the base, 9–12 cm. long, 4–5 cm. broad, dark green above, pale green below, quite glabrous, very closely and finely reticulate on both surfaces; midrib slightly impressed above, very prominent and pale below; lateral nerves about 15 on each side of the midrib, spreading almost at a right angle and much branched towards the margin; petiole 1·5cm. long, very slightly grooved above, quite glabrous. Inflorescence terminal, shortly racemose, about 15-flowered; perulae broadly ovate, cuspidate, glabrous outside, silky inside towards the top; pedicels 1 cm. long, glabrous, light green. Calyx saucer-shaped, 5 mm. long, finely glandular-pilose outside the disk-like base, lobes ciliate, broadly oblong, pale greenish-white, with a small reddish blotch within the base of each. Corolla red, broadly tubular, the tube 3 cm. long, marked inside with lines of darker spots between the lobes; lobes 5, sub-orbicular, emarginate, 2 cm. long and broad. Stamens 10, as long as the tube; filaments white, pubescent in the lower third; anthers dark chocolate, 4 mm. long. Ovary 8–9–celled, oblong, densely papillose-pubescent, and with a few short and more bristly hairs; style overtopping the stamens, pale greenish-white, glabrous. Young fruits 2 cm. long, rusty-pilose with branched hairs.

Described from a plant growing in the open ground at Kew. Type specimen in the Herbarium. *J. Hutchinson.*

THE RÔLE OF MYCORRHIZA IN PLANT GROWTH.

(*Continued from p.* 194.)

THE MYCORRHIZA OF TREES.

Much light has been thrown recently on the bionomics of tree mycorrhiza by the work of a Swedish botanist and forester, Dr. E. Melin.

A number of fungi whose fructifications—toadstools—are a common feature in woods, have been identified as the specific mycorrhiza-formers of Pine, Spruce, Larch, Birch, Aspen and other trees. These fungi show specialisation to their symbiotic habit, and it is possible that some of them are unable to complete their development except in association with the roots of their hosts. Otherwise, it is not clear that they can derive any permanent benefit from the association, since there is no evidence of parasitism of the ordinary kind.

The mycorrhiza of trees is characteristic and easily recognised. In Pine and Spruce, for example, it consists of dense lateral clusters of short, repeatedly branched roots, variously coloured according to the fungi present. Sometimes the branching is so crowded as to produce the appearance of small tubers, and these two kinds of mycorrhiza—tuberous and forked—may be found growing side by side on the same main root. Structurally, they belong to the ectotrophic type. Each rootlet is enveloped in a sheath of mycelium formed by the close interweaving of hyphae continuous internally with a hyphal branch system penetrating between the cells of the root, and externally with another linking up with the network of mycelium in the soil. Penetration of the root-cells takes place more extensively than was formerly believed, but, in a general way, this type of mycorrhiza, so characteristic of trees, is very easily distinguished from the endotrophic type, *e.g.*, of Orchids.

From the point of view of nutrition, the essential feature is the fact that everything entering the root from the soil must do so through the investing envelope of mycelium, passing thence to the root cells through the hyphae which form a continuous meshwork between them. Since a majority of absorbing roots are mycorrhizas, it follows that absorption of soluble food material is almost entirely controlled by the activities of the fungal sheaths. It was this fact that first challenged Frank's attention more than fifty years ago and aroused speculation and controversy as to the effect produced on the nutritive processes of the host trees.

Now, mycorrhizas of this kind are formed by most woodland trees, and are developed most freely in the upper layers of soil rich in humus from the accumulation of fallen leaves and other detritus. Moreover, it has been proved experimentally that the production of normal tree mycorrhiza depends upon suitable soil conditions and is readily influenced by changes in the soil reaction *e.g.*, by a decrease of acidity or by the presence of unsuitable nutrients and toxic substance such as those produced in garden soil during heat sterilisation. For example, those mycorrhizal fungi that have been isolated from the roots of trees thrive only in an acid medium of similar reaction to that of the woodland soil in which they grow naturally, whereas other fungi widely distributed in the same soil but incapable of forming mycorrhiza, are indifferent in this respect. In view of all these facts, it is clearly of some practical importance to know whether the possession of mycorrhiza is beneficial or otherwise to trees, as well as to understand the soil conditions which encourage or retard its formation. Thanks to the recent researches carried out by Dr. Melin, certain facts may be regarded as well established.

In all such work it is essential, firstly, to compare the growth of the experimental plants with and without mycorrhiza; secondly, to isolate and prove the identity of the root fungi and learn something of their behaviour and properties outside the plant. It is by such means that the following conclusions have been reached.

In the first place, there is no evidence that the early stages of seedling development in trees are bound up in any way with fungus infection, or that anything in the nature of an obligate relation exists in any tree yet studied.

As regards the effect on nutrition, it must be noted that woodland soils possess certain definite characteristics, and it is in such soils that the mycorrhiza of trees is typically developed in northern Europe; moreover, there is evidence that the acid character of these soils and the nature of the organic compounds present are important factors in promoting its healthy formation and functioning. In such soils there is severe competition for water and salts, and they show a notable deficiency of certain constituents, especially nitrates. On the other hand, they possess large reserves of nitrogen locked up in the form of organic compounds. Now, the experimental evidence indicates that the absorption of mineral salts is carried on rather more efficiently by infected than by uninfected roots. The most significant results, however, relate to the supply of nitrogenous material. There is at present no evidence for fixation of atmospheric nitrogen by any of the known root-fungi of trees, but it has been shown that they utilise such organic compounds of nitrogen as are present in humus much more efficiently than do seedlings of their hosts. That the latter profit is likewise proved by the results of experiments with infected and uninfected seedling trees. Hence, the supply of nitrates being usually very deficient in woodland soils, it may be concluded that mycorrhiza possesses a vital significance for trees and other plants growing in such soils, and that its free development results in marked benefit to the vascular hosts by increasing the supply of nitrogenous food material.

It is interesting to note that these conclusion are supported by certain recent observations on the nutritive significance of mycorrhiza in acid woodland soils in Germany. There can be little doubt that further experiment will permit their extension to all trees showing a mycorrhizal habit similar to those already studied in Sweden.

Turning now to Ericaceae, we must note the soil preferences shown by many members of this group. Ling, Heather, and many of their allies, are characteristic and abundant members of the vegetation of humus soils—moorland, heath and woodland—in various regions. Certain species are confined to such soils in nature and are difficult to cultivate in gardens, unless supplied with peat or humus. Although an obligate association with specific endophytes is a feature common to these plants as to Orchids, the mycorrhiza of Heaths shows structural features resembling that of trees. Indeed, in the opinion of the writer, the practical interest of mycorrhiza to students of soil condition at present centres about the nutritive relations of forest trees and certain Ericaceous species with their respective root fungi.

In the Ling and some of its allies an obligate symbiotic relation unique of its kind has been revealed by experiment. In these plants, the mycelium which profusely besets the young roots spreads throughout the tissues of the vegetative shoots, flowers and fruits, infecting the seed-coats of the developing seeds that are eventually shed, bearing with them the hyphae of their fungal symbionts. Seeds, superficially sterilised and then sown under aseptic conditions germinate freely, but the resulting seedlings are incapable of forming roots or of advancing beyond the earliest stages of development in the absence of their fungus partner. In respect to the mode of infection by the root fungus, the condition found in Calluna and other Ericaceous species is unique among flowering plants, for, in all other known cases, the mycelium enters the plant from the soil. The obligate nature of the association is probably confined to the seedling phase, and it is not at present certain—either in Orchids or Heaths—that it extends to the adult, although infection of the roots follows inevitably upon that of the seedling at germination.

In Ling, as in trees, it has been shown that the formation of functional mycorrhiza depends upon the character of the soil, and there is evidence that reduction or suppression of mycorrhiza formation is accompanied by changes in the nutritive activities of the root-cells. In Heaths as in Orchids there is an extensive development of mycelium within the living cells of the root, followed later by its digestion and the disappearance of the resulting products.

In Calluna and probably in allied species, the formation of functional mycorrhiza is closely correlated with the soil conditions. It is at a maximum in heath and moorland soils and in cultivated soils with abundant humus; much less conspicuous in sandy soils deficient in humus, and under experimental conditions may appear to be absent, although the roots are never entirely free from fungus infection. It is, in short, directly related to the amount of humus present. If, as in trees, the possession of mycorrhiza enables Heaths to tap the potential food materials locked up in humus, it is difficult to resist the conclusion that the wholesale digestion of mycelium must react favourably on their nutrition. In Ericaceae the relations with the root fungi are more specialised than in trees and there is good evidence that this beneficial effect just described is supplemented by the ability of the root fungi to make use of atmospheric nitrogen.

If seedlings of these and other obligate mycorrhiza plants could be raised free from fungus infection it might possibly be shown that species normally subject to form mycorrhiza thrive better under the relatively "sheltered" conditions of experiment if protected from infection, whereas, when exposed to competition in nature, the possession of mycorrhiza has become of critical importance in the inevitable struggle for survival.

The intolerance to lime shown by many Ericaceous species raises various points of interest in connection with their mycorrhizal habit. The calcifuge habit, although prevalent, is not invariable in members of Ericaceae. Erica carnea and E. mediterranea are species found naturally on limestone soils, and there is the still more interesting case of the Chinese species of Rhododendron cited by Mr. Grove in a recent number of this paper.* The reaction of Ling (Calluna vulgaris) to calcareous soil has been studied experimentally by the writer. Some of the facts elicited may be worth reviewing in connection with Mr. Grove's very interesting observations and his references to the views expressed by the late Sir Isaac Bayley Balfour on the same subject. *M. C. Rayner.*

(*To be concluded.*)

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* *Gard. Chron.*, Nov. 26, 1927.

NATURALISATION OF SNOWDROPS AND WINTER ACONITES.

In "Garden Notes from South-West Scotland" (*Gard. Chron.*, March 3, p. 153), Sir Herbert Maxwell calls attention to the capricious nature of the Snowdrop, and also to the difficulty many persons have in establishing the Winter Aconite. The Snowdrop here gives no trouble. Clumps can even be lifted when in full leaf, divided and the separated bulbs replanted in grass; and they will come up quite happily the following year and bloom. This is accommodating, for in these grounds there happens to be a goodly number of the double form, which is not so pleasing to the eye and also produces no seeds. As the bulbs do not resent being moved when in flower, a ready means is thus afforded of propagating only from the single form.

The naturalisation of the Winter Aconite, on the contrary, has so far not met with success here. Some years ago a college friend and I collected (with permission!) a quantity of seeds of this delightful harbinger of spring from the Backs of St. John's College, Cambridge. It ran riot there, covering a large area and making a fine display, and may still do so, for all I know. We secured quite a lot of seeds—perhaps a quarter-of-a-pound each—and we conjured up visions of sheets of gold in a few years' time. Our dreams, alas! never materialised. The seeds were sown in prepared patches on grass and germinated well, but the plants resulting therefrom never flourished. They gradually dwindled away. My friend's garden is also situated in Cumberland, at St. Bees, and is, I think, in the same geological formation. In both gardens the Winter Aconite grows quite well and increases in beds and borders.

My opinion, up to the present, was that the plant required richer soil than we could give it under natural conditions; but the reason for failure to establish itself may be more subtle than this. Here are some problems for our ecologists to probe and, if possible, solve. *J. Parkin, Blaithwaite, Wigton, Cumberland.*

A REVISION OF VIOLAS.

(*Continued from page* 172).

In addition to the three foregoing species, there is still another, V. Forrestiana, from the Salween Divide, at 12,000 feet, one of Forrest's discoveries, more remotely akin to V. pinnata than any of the foregoing, but with all the marks of the type except that the cordate-triangular leaves are deeply incised at the base only, the flowers are smaller and more longly-spurred, are white and borne on rather short peduncles. Thus the group is carried into south-east Tibet, and its range correspondingly enlarged. The last-named, having been collected in 1922 and described in 1924, is not likely to have reached the stage of cultivation; indeed, very little more may be said of any others of the group with the exception of V. pinnata itself, which in turn, as Farrer states, has proved difficult. Its difficulty may be due, I hazard, to the fact that it is a frail thing; that it is not really a high alpine and need not be treated as such—its range in the European Alps is from 2,300 to 8,500 feet; and that it has not been recognised as being preferably or even exclusively a limestone plant. In nature it inhabits screes and stony places among bushes. Among the more accessible places where it may be found are the Fassa Valley in the Dolomites; Monte Baldo and the Val Vestino; the Zermatt and Saas districts (as at Galen, where the leaves are but little divided); and in the hills above the Rhone Valley, just where the Rhone turns its right angle at Martigny, on the north side.

V. POETICA, Boiss. and Sprun., is a fragrant Cenisia Viola from hills north of the Gulf of Corinth; it is hardly to be separated from V. fragrans of Crete. Both are alpine species from above 6,000 feet. The stems of an inch or two, to which Farrer refers, apply to the flower stems only, as the plant stems attain at least six inches. It is a true rock plant, growing in rock fissures. Whereas the flowers of V. poetica are violet, those of V. fragrans are either yellow or pale violet. Neither are more than three-quarters-of-an-inch across, and in other particulars are only botanically distinct from V. cenisia.

V. POLYCHROMA, Kerner, is the Austrian form of V. alpestris.

V. PRIMULIFOLIA, L., (not primulaefolia), has no relation with V. Patrinii; in stating this Farrer may have had in mind V. primulifolia, Roxburgh, which is synonymous with V. inconspicua, Blume, one of the Patrinii group. Farrer states that the species comes from American woodlands and far across Asia—from which it would appear that the two species have been confused. The true V. primulifolia is the primrose-leaved Violet from America, native to the coast lands from New Brunswick to Florida and Louisiana, where it grows in moist, open ground. It is a relative of V. palustris, V. blanda and V. lanceolata. The tufts of foliage to which Farrer refers again indicate the confusion between the American and Asiatic plants, as the true species has leafy runners which root in autumn. It is the largest of the white Violets of the palustris group. The leaves, like those of Primroses, are unmistakable. Seeds sent to me from Paris have germinated and proved true.

V. PSEUDOGRACILIS, Strobl., has no connection with V. gracilis. There is confusion between this plant, which is akin to V. nebrodensis sb-sp. grandiflora, and V. heterophylla var. messanensis. The plant commonly offered in catalogues is probably the latter. The true plant grows near Naples and south thereof, and at Tivoli, near Rome, on the highest and often precipitous limestone rocks from about 3,000 to 6,000 feet, sometimes near the melting snows.

V. PUBESCENS, Aiton, frequents dry, rich soil in woods along the line of the frontier from Nova Scotia to the two Dakotas. It is, therefore, unlike V. biflora, which prefers dense shade and dark places under dripping rocks. The American cousin of V. pubescens—V. eriocarpa (syn. V. scabriuscula)—inhabits low woods and low-lying meadows, and is thus in habit more akin to V. biflora. Both are easy in cultivation, but one is often mistaken for the other. Unlike V. pubescens, V. eriocarpa is nearly glabrous; it has one to three basal leaves when in flower, whereas the basal leaves of V. pubescens are then usually absent; the other leaves are more crowded at the top of the stem than in V. pubescens; all the leaves are more coarsely toothed; and it is earlier to bloom than V. pubescens. In nature the two species are very distinct when in their own exclusive domains, but in districts common to both it is hard to differentiate them; yet no hybrids are recorded. Mr. Bowles stated that V. pubescens is the largest-flowered of the yellow Violets—a statement which might be amended to read "of the yellow Violets in cultivation."

V. PUMILA, Chaix, seeds of which may be obtained under the synonym of V. pratensis, Fries, is a Dog Violet; not rare, as it inhabits a large area of Europe from England to the Ural Mountains, and also Turkestan and Siberia; generally it is found in rather dry places; is not particularly little, as it may rise to fifteen inches; and the flowers may be light or dark violet, the earliest blooms being dark, and the later ones lighter, with dark lines (whence doubtless the striped pale lilac flower of Farrer).

V. PYROLAEFOLIA is a subject of considerable confusion. It would appear that the plant intended by Farrer is V. pyrolaefolia, Poiret, which Skottsberg, in his authoritative work on the Andes of Patagonia, in 1916, described as V. Reichei, giving as a probable synonym V. magellanica, Reiche, whereas Farrer's description in parts, especially of the blooms, suggests V. magellanica, Forst. In any case, there are two admitted species—one, V. Reichei, Skottsberg; the other, V. magellanica, Forst. The description given by Farrer, both in the warm praise of the plant and flower, and in the directions for cultivation, suggest that he had, or had seen, the plant; yet the apparent impossibility of procuring it, and the extreme unlikelihood of its being anywhere in cultivation, together with the apparent confusion between two species, would make it appear that this could not be so. V. Reichei is akin to those most curious Violets of the Andes and Patagonia which look more like Sempervivums or Aretian Androsaces than Violets; the root is very branching, each branch ending in a close rosette of leaves with very short petioles. In this species the leaves are round or reniform, leathery (like those of Pyrola), very small, and nearly glabrous. The flowers are yellow, rather large for the size of the plant (17cm. long), and larger than in V. magellanica. The egg-shaped and roughly hairy leaves and flowers pencilled with dark red veins, of Farrer's description, belong therefore to another plant. V. Reichei is native to the Patagonian Andes and to Terra del Fuego. It is one of a little-known series which would be as interesting in cultivation as the higher Androsaces.

V. RAFFINESQUII, Greene, is an annual bluish-white or cream-coloured Violet which is of no importance in cultivation, but of considerable interest as being the only American representative of the European Pansy. It was named after Constantine Raffinesque, a Sicilian, who for a long period devoted himself to the natural history of the United States. The species is widespread from Canada to Texas, frequents fields and open woods, and is nearer to V. arvensis, Murray, than to V. tricolor, but is so far better in that the petals are twice instead of half the size of the sepals, and is not such a troublesome weed as the naturalised V. arvensis from Europe has proved itself. *E. Enever Todd, Lt.-Col.*

(*To be continued.*)

MESEMBRYANTHEMUM.

(*Continued from page* 195).

PUNCTILLARIA, N. E. BR.

6. **P. Dekenahi, N. E. Br.**—Leaves 1–2 pairs to a growth, ascending-spreading, or spreading, 1¼–3 inches long, 8–13 lines broad at the middle, 4–6 lines thick at the base and 6–14 lines thick near the apex, usually they are curved to one side, so that the flat or slightly concave upper side is more or less falcately sublanceolate (or less commonly straight and lanceolate) in outline, acute or obtuse, rounded on the back at the base, strongly keeled and compressed, and with slightly concave sides at the apical part, where, in side view, one leaf is more obtuse or rounded into the apex than the other of each pair; smooth glabrous, greyish-green, slightly tinged with rose on the angles on the imported plant, and thickly dotted with dark green, the dots not being prominent. Flowers solitary, not seen. Pedicels of capsules 5–6 lines long, with a pair of bracts at the base, which are probably partly included between the bases of the leaves when in flower. Capsule, when closed, 5–6 lines in diameter, hemispherically obconic, partly superior, slightly depressed on the flattened top, with the sutures of its 10–12 valves slightly raised, dull brown; when expanded about an inch in diameter, with the valves slightly recurved, and the whole interior dull blackish-brown; expanding-keels standing apart and slightly diverging, or subparallel, scarcely half so long as the valves, stout, with rounded edges, acute (but not awned) at the apex, not winged; cells acutely roofed with very stiff cell-wings that are turned back at the opening like the mouth of a trumpet, and the opening partly or nearly closed by a blackish-brown, compressed tubercle. Seeds few in a cell, about ½–¾ line in diameter, compressed, roundish in outline, with a small point, microscopically tuberculate, blackish-brown.

Fraserburg Division: Near Fraserburg, Dekenah in Herb. Muir 4102.

Described from a living plant sent to me in November last by Dr. J. Muir. I have not yet seen its flowers, but they will be described later. This new discovery, however, is easily distinguished from its allies by its falcately curled leaves.

In the *Zeitschrift fur Sukkulentenkunde*, 1927, p. 23, Schwantes has united the genus Punctillaria with Pleiospilos, because he states that the capsules of these two genera do not differ, and that in those of Pleiospilos Bolusii and P. simulans there is a small tubercle present at the opening to the cells, but that it is hidden by the cell wings, and that I am mistaken in supposing it to be absent. But here, as in so many other cases, I find he is far more eager to claim authorship than to make careful investigations, and so has created much useless synonymy, for besides the fruit I previously examined, I have before me as I write between twenty and thirty capsules of P. Bolusii and several of P. simulans that I myself picked from living imported plants, not one of which possesses any tubercle, small or large, such as is found in the capsules of all the species of Punctillaria (optata, magnipunctata, Roodiae, Dekenahi) that I have examined. From this, I can only suppose that the capsules examined by Schwantes were either from hybrid cultivated plants or from some that were wrongly named, they certainly could not have been from any true Pleiospilos, if his statement is correct. Besides the character of the absence of a tubercle at the opening to the cells, the capsule of Pleiospilos also differs from that of Punctillaria by the much longer awn to the expanding-keels and the manner in which the marginal wings extend along it, as is clearly shown in my illustrations of the generic characters in *The Gardeners' Chronicle*, 1926, Vol. LXXX, p. 88, f. 50, as compared with those of Punctillaria on p. 212, f. 104, of the same volume. There is also the difference in foliage.

P. compacta, N. E. Br., in *The Gardeners' Chronicle*, 1926, Vol. LXXX, p. 228. In Dryander's manuscript notes at the British Museum, I find it recorded that Mesembryanthemum compactum, Ait. flowered at Kew in November, 1781, that its flowers are yellow, and the "leaves as long and as thick as a finger." Dryander's Latin MSS. description, translated, reads as follows:—"Stemless. Leaves connate, dotted, semiterete, triquetrous and somewhat reflexed at the apex, acute. Flowers sessile; calyx subcylindric, six-lobed." All this quite agrees with the plant I have described as P. compacta which is also cultivated as M. nobile. But Schwantes, without giving the slightest reason for so doing or indicating how they differ or can be identified, has given them separate names. Therefore to the synonymy of this plant must be added: Pleiospilos compacta, Schwantes, and P. nobile, Schwantes, in *Zeitschs. f. Sukk.* 1927, p. 23. *N. E. Brown.*

(*To be continued.*)

NURSERY NOTES.

MESSRS. SANDERS, BRUGES.

About a fortnight ago the writer was in the ancient city of Ghent, and, having a few hours to spare, needed no very pressing invitation from Mr. Louis Sander to return to Bruges and spend them at Sanders' Nurseries. A visit was paid to this extensive establishment very shortly after the war, and on that occasion heroic efforts were being made to wipe out the effects of an alien occupation and the disasters inherent to invasion. So splendidly have these efforts continued that now there is not the slightest evidence of those untoward events, except that in the big Bay sheds there are marks on the lower timbers which show where army horses were stabled.

Many alterations have been made during the past five years. Old houses have been cleared away, new blocks of houses built, and new methods of heating adopted, in addition to a thorough co-ordination of heating, whereby many fewer boilers are used than in the old days. Moreover, there is a greater compactness—if such a term can be used in such a huge undertaking—and this is due to very careful re-arrangement during the rebuilding of certain parts of the nursery.

Everything is as clean and tidy as it possibly could be, and it was a great pleasure, although a little tiring, to inspect block after block, and often house after house in ten acres of closely-placed glasshouses, not to mention the huge Bay sheds packed with piled up—tub upon tub, and pot upon pot—Bay trees of all sizes, Cordylines, Acacias and many subjects that come under the old general heading of New Holland plants. Some of the Bay trees are of enormous size, and all of them, large and small, will be placed out-of-doors during April. With the exception of those plants which stand near the big double doors, and therefore get the most air, none is watered from the time it is housed until it is once more placed in the open. All, however, get a thorough soaking at housing time.

Palms are cultivated in incredibly large numbers—there must be literally millions—and the principal kinds grown are Kentia Forsteriana, K. Belmoreana, Phoenix Roebelini, P. canariensis, Cocos Weddelliana, C. plumosa and Livistona rotundifolia. For the continental trade many of the Kentias are grown three or five together in pots or small tubs, and the plants so associated are of different sizes, so that the whole specimen presents a well-furnished and bushy appearance. There are, of course, big individual specimens, and some of the very large Kentias and Phoenix Roebelini are splendid examples of skilful cultivation. The serried ranks of small Palms in seed-pans, in tiny pots, in 60's and 48's, make one wonder how it is possible to sell such a huge quantity. The average life of an average Palm in a forty-eight-sized or thirty-two-sized pot, after it leaves the nursery, must be very small.

From Bays and Palms, one turns with some relief to flowering subjects, and a houseful of Gerberas comes as a surprise until the demand for cut flowers is explained. And then the Orchids. Imagine a house about as long as the R.H.S. Hall, and fully half as wide, filled from end to end with specimen Cymbidiums—such was one of the sights! Every plant carried its quota of spikes, some so many as from eight to fourteen. Few carried expanded flowers, but by the time these notes appear that big house will be a paradise of beauty. There are examples of all the best known hybrids that claim descent from Cymbidium insigne, C. Lowianum and C. eburneum, and also many new ones resulting from crosses effected at Bruges. I lost count of the number of other smaller houses filled with Cymbidiums of lesser size, still others crowded with seedlings, and dozens of houses of Azaleas.

Then came house after house of Odontoglossums, Odontiodas and Miltonias, all in the rudest health; Cypripediums in battalions, including fine batches of C. Maudiae, C. Curtisii Sanderae and C. Lawrenceanum Hyeanum; Phalaenopsis Rimstadiana by the houseful; Laelio-Cattleyas and Cattleyas. One house filled with Cattleya Fabia arrested attention by reason of the very fine condition of the plants; C. Remy Cholet raised at Bruges was conspicuously good and in flower.

In other houses several interesting plants came under notice, *i.e.*, Comparattia macroplectron, Cattleya Zephyr, Oncidium Cavendishianum, and a form of this species which has for several years regularly produced double-lipped flowers; Columnea microphylla—four big plants just coming into bloom; a very pretty, almost white, form of the variegated-leaved Pineapple; Alocasia Micholitziiana, Linospadix Micholitzii, and a very graceful Asparagus named A. myriocladus that promises to be a useful addition to those foliage subjects which are especially useful for providing elegant sprays to associate with flowers.

Fading daylight alone prevented a complete inspection of this fine establishment, but as there will be a much longer period of daylight when the Ghent Quinquennial Show is held, Sanders' Nurseries at Bruges should certainly be one of the places to be seen by British visitors. Bruges is rather more than half-an-hour's run by train on the return journey from Ghent and it is the first stopping place on the outward journey from Ostend. The old city, with its historic associations and ancient buildings, is well worth a visit. *C.*

MARKET FRUIT GARDEN.

Although the first half of February was wet, the total rainfall for the month, 1·41 inch, was under the average. A spell of twelve consecutive days without rain during the last fortnight contributed to this result, and was most welcome for the opportunity it gave to clear off some of the heavy arrears of work. The calm, sunny days were ideal for finishing the winter spraying, which had been a very slow and protracted business. It was concluded only just in time, for the buds of some varieties of Apples had approached very nearly to the stage at which it would have been dangerous to use tar-distillate wash. A few Baldwin Black Currants were actually showing leaf, and were not sprayed; but all other trees and bushes on the place have been treated with this wash, although some of them under unfavourable weather conditions. Fruit buds are plentiful on Apples, Pears and Plums, but they are more forward than one likes to see them.

Manuring Bush Fruits.

The most formidable job done during the winter was the manuring of bush fruits, not yet quite finished. Having the unusual opportunity to secure a large supply of good farmyard manure, I decided to dress the whole area of bush fruits. It would really have been better not to have attempted so much. If half the crop can be given farmyard manure each winter, or even a third of it, the rest do very well with artificials, which are applied with infinitely less labour. My bush fruits have received little of the natural manure for some years, and the opportunity seemed too good to be lost. The heavy labour of carting the stuff, wheeling it on to the ground in barrows, and spreading it, when added to the rather high cost of the manure, makes the dressing so expensive that it would hardly pay if the whole outlay had to be debited against the crop of one season. Fortunately, however, this is not the case, for the benefit will be lasting. My soil is particularly lacking in humus, and liable to run together and become very hard. A dressing of bulky manure is therefore quite as valuable for its mechanical as for its fertilising effect, the improved working condition of the land making for ease in hoeing and horse cultivation. The only fertiliser at all comparable with farmyard manure in this respect is wool shoddy. As this is purely nitrogenous, and should be balanced by the addition of phosphatic and potassic fertilisers, the cost for materials is generally higher than for farmyard manure; but the work of application is so much lighter that the shoddy is probably more economical in the long run.

Cooking Apples in Boxes.

Most of the Apples from my air-cooled store, to which reference was made in my last notes, were packed in bushel boxes. I had not previously tried this method for cooking Apples. These were all Bramley's Seedling, and they paid very well for boxing. On the same day I sent to Covent Garden two consignments of identical Apples, one packed in baskets and the other in bushel boxes. Those in the baskets were carefully graded as "firsts" and "seconds," and they sold at 9s. and 7s. gross per bushel, respectively. The boxes sold at 10s. to 15s. each, according to the "count" or size of the Apples. The comparison is more striking when the average net return is considered. This was 13s. per bushel in boxes, and 6s. 6d., exactly half, in the baskets. The consignments did not go to the same salesman, and it is quite likely that the firm who handled the boxes might have done rather better with the baskets, although they certainly would not have been sold to such advantage as the boxes, the return for which was far above any published prices. It was no chance result, for I sent several more consignments in boxes, and the same prices were realised.

This is the most decided instance of the advantage of non-returnable boxes as compared with returnable baskets which I have experienced, although all through last season the boxing of Apples paid remarkably well. This does not mean, of course, that one can pack just any

Apples in boxes and secure a better price for them. What it comes to is this: If a grower manages to produce a really fine sample of Apples his only means of realising the full value of them is to pack in trays and boxes, using the standard diagonal pack, in the latter case, and wrapping each Apple in white, tissue paper. The public are becoming more and more particular as to the quality of the fruit they buy. Apples of low grade are now almost unsaleable, and probably do not pay to grow. Apples of high grade, on the other hand, are still a sound business proposition. They must possess size, colour, and freedom from skin blemishes. During the coming season I shall make still more strenuous efforts to secure such fruit. The thinning of the crop, already an annual operation, must be done more severely, so that a large proportion of the crop may be big enough for boxing. Colour is naturally obtained on my soil, especially in plantations that have been grassed down. Freedom from skin blemishes means practically a good control of scab, and is the most difficult of the desirable qualities to ensure. Three applications of fungicide will be given, but it is to be feared that, even then, the result will be governed largely by the weather, particularly that of May. Finally, in order that the exact sizing of the fruit essential for rapid boxing may be obtained with the least labour, a Cutler mechanical grader will be imported and installed.

PRUNING.

Attention to bush fruits and the packing of stored Apples have occupied so much time during the winter that the pruning of Apples and Plums has got into arrears. All young trees, which cannot be neglected without harm, have been pruned; but it is unlikely that all the older bearing trees will receive attention, although the work will continue throughout March and April. Although one likes to prune every year, it is not a matter of great importance in the case of old trees of some varieties. Bramley's Seedling and Worcester Pearmain, for instance, do perfectly well if merely thinned out every two or three years. The weak-growing Lane's Prince Albert, on the other hand, should be tipped annually, or it is likely to cease growing. Allington Pippin, and to a less degree, Cox's Orange Pippin, call for regular treatment, because they make so many laterals which must be spurred if only to get them out of the way and keep the trees open. I do not find, by the way, that this has the least influence towards inducing annual bearing. Allington Pippin, which is always spur-pruned, is an inveterate biennial bearer, except when young. Worcester Pearmain, on the other hand, which seldom gets more than a thinning out, partly because it is a "tip-bearer," is the most regular cropping variety we have. One plantation of old Apples has been taken in hand thoroughly and pruned throughout. In the others it will be necessary to concentrate on those varieties which need pruning most. Plums of full bearing age never receive more than a thinning out; and this may be left till the late spring or early summer, when one is bound under the Silver Leaf Order to go through them to cut out dead wood.

The shaping of young trees is, of course, very important, and I like to do so much as possible of this myself. I am going over some which have been pruned by assistants. The work has been well done on the whole, but a cut here and there makes all the difference. I wish no one had ever invented, as an axiom in pruning, the direction, "Cut to an outward-pointing bud." This is the one thing that all students get fixed in their heads, and it is difficult to induce them to depart from it when necessary. All round the outsides of trees of spreading habit, particularly round the base of the head, the leading shoots need cutting to buds pointing upwards or inwards. Otherwise the lower branches sprawl out and have to be dealt with severely later on. Some young pruners will cut to an outward bud even if it points almost to the ground and threatens to make a tree with the habit of a Weeping Willow. This is a matter of more importance on a fruit farm than in a garden, for it is necessary to carry on with horse cultivation close beside the trees for some years after planting, and straggling branches near the bottom cannot be tolerated. Some of these branches are all the better for being headed back to a lateral which points upwards. Instructors would do well to abandon the axiom "Prune to an outward-pointing bud," which, with some varieties, is wrong almost as often as it is right, and substitute, "Prune to a bud pointing in the direction in which the new shoot is required to extend in order to produce a shapely tree."

Another piece of standard pruning advice which is wrong is that which directs the cutting of weak shoots more severely than strong ones. Let any one attempt to correct an unbalanced tree by this means, and watch the result, and he will soon see that it becomes more unbalanced than ever. It may be true that "growth follows the knife," but pruning has a dwarfing effect for all that. Young Plums are apt to make some very strong shoots at the top, which run away from the others and spoil the shape of the tree. In some cases the rankest of these shoots may be cut right out at a point from which a weaker lateral occurs, which should be allowed to take the lead. Generally speaking, however, the best way to balance such a tree is to cut the rank shoots hard and leave the rest full length. *Market Grower.*

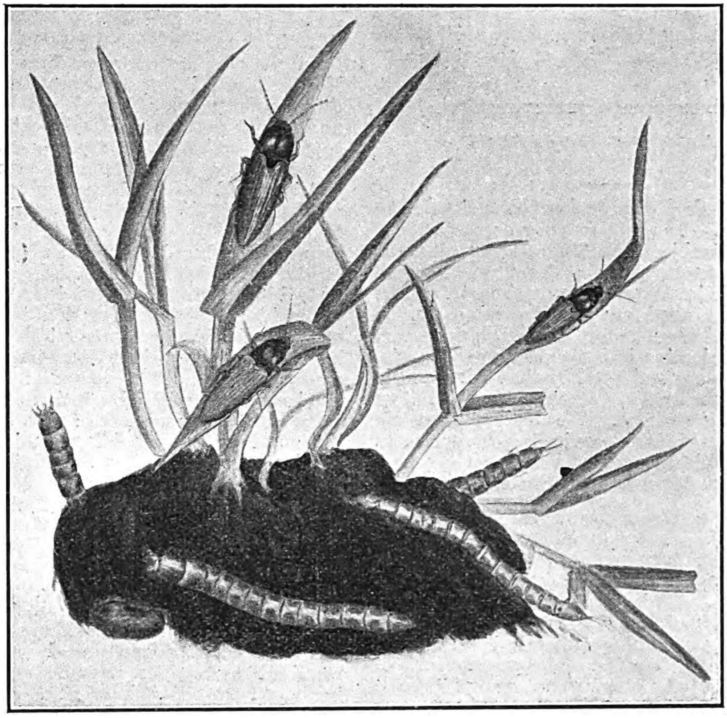

FIG. 107.—CLICK BEETLES AND WIREWORMS.
Left, Elater linearis; right, E. sputator; below, wireworms.

SOME NOTES ON WIREWORMS.

THE wireworm has for many years been the subject of much research and many articles, yet, in spite of this, it remains a serious pest on garden and farm. Under good garden conditions wireworms are, perhaps, most troublesome to crops under glass, when such crops are grown in turf which has been introduced into the garden from a wireworm-infested field. Turf is usually pared from the top of a field, brought into the garden and stacked for a year or more to allow the grasses to die and the grass roots to begin to decay. The material is then broken up and used as the base of most potting soils.

Normally, the species of wireworm which are garden pests are grass-root feeders, and they occur in varying numbers wherever grasses grow (Fig. 107).

*Roebuck examined three grass fields in Shropshire and calculated that per acre 215,000, 350,000 and 510,000, respectively, were present. This record is sufficient to show that in some fields wireworms are present in considerable numbers. When turf from an infested field is pared and stacked the wireworms present go on feeding on the grass roots, and if no other food is available will complete their larvae period by feeding upon decaying organic matter in the heap. On the other hand, if, after the grass roots are dead, the turf is broken up and used as a rooting-medium, the introduced plant roots are nearly always attacked.

Recently I came across an interesting incident in connection with the feeding habits of wireworms. A Tomato-grower with a large area under glass, is in the habit of changing his soil in the Tomato houses every third year, replacing it with the top three inches of soil, taken from a large fruit plantation, carrying Apples underplanted with Gooseberries, which has been allowed to fall back naturally to grass. The old soil from the houses is used to replace the soil taken from the plantation. The grower states that although the material taken from the plantation is heavily infested with wireworms they do not touch his Tomato plants the first year, but in the second and third years are most troublesome. His practice now is to introduce the soil and take a crop of Tomatos. The following spring, before the second crop of Tomatos is planted, Wheat is sown in drills four feet apart; the wireworms congregate at the germinating Wheat and are collected and destroyed. The Tomato plants, during the second and third season suffer very little harm if this plan is adopted. From this evidence it would appear that wireworms would rather feed upon the roots in the turf during the first year, and that Tomato roots are not preferred. In the second year the grass roots have either disappeared, or, more probable, have reached the stage in decomposition when they are not relished by the wireworm, and the wireworm then takes to the Tomato roots, when introduced.

We know very little, comparatively, about the habits of wireworms, except that they appear to feed upon the roots of most crops. It has been stated that these pests live entirely under ground and feed upon the roots of plants; these statements are frequently incorrect, *e.g.*, wireworms will attack Tomato plants, entering the stem just below the ground-level, and will then tunnel upwards, and I have found twelve to fourteen specimens in a single stem a foot or more above ground-level. Again, the wireworm has been noted as forming part of the diet of owls; so far as we know, owls do not dig for them, and we may assume that the wireworms come to the surface of the soil at night, and when in that position are taken by the owls. If proof of the fact that wireworms do come to the surface at night is desired, the doubting one has only to examine a plot of land during the late evening, after rain, when wireworms will then be found on the surface ; whether or no the wireworms feed when on the surface of the soil, I have not been able to satisfy myself. They are not found on the surface, except towards dusk, and the light at that period is not sufficient to allow of much critical examination. It is interesting to note that if wireworms are turned up from the soil during the day and placed on the top of the soil, they disappear into the soil very quickly, but that if the specimens are turned up at dusk they are much more leisurely in their movements. It appears to me that wireworms are very susceptible to light, and so long as the light is diffuse they do not greatly object to being out of the soil ; this susceptibility is closely allied to another, that of the wireworm's love of moisture. A wireworm kept in a dry match-box will die in thirty to forty minutes, but if moist sand is placed in the box the specimen will live many months, if the sand is kept moist. One of the best controls for wireworm is, of course, based upon this, namely, summer cultivation ; if soil is constantly stirred during the summer many wireworms are killed off owing to the dry condition of the cultivated soil. *Somerset.*

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* Roebuck. Board of Agriculture (1920) *Miscellaneous Publications*, No. 23, page 9.

HOME CORRESPONDENCE.

A French Method of Inducing Quick Establishment of Trees.—In reply to your correspondent on the above subject (p. 87), will you allow us to point out to her that at least one English nursery firm is in advance of our French friends. Every tree we send out has its roots dipped in thick clay before being packed. Moreover, this clay has nicotine in it to kill any soil pests, and trees are also fumigated by the hydro-cyanic gas method so as to remove any possibility of pests being present. We believe that we were the first to give this service to our customers —a service which does not increase the price. *W. Seabrook and Sons, Ltd., Chelmsford.*

Chemical Fertilisers for Potatos.—After so much space has been given to this subject, I hesitate to ask for more, but Mr. Gavin Brown's remarks on page 181, are so inaccurate that I cannot refrain. To be very brief, it is not the case that when sulphate of ammonia is used in the drills nitrogen is quickly liberated and washed into the subsoil before the root-system can take advantage of it. No one who has grown Potatos extensively under the system of using a complete fertiliser in the drills can fail to see the effects of the sulphate of ammonia in the foliage, thereby obtaining optical evidence that it has not been wasted, but on the contrary has helped substantially to give the plant that vigour which is subsequently reflected in abundant crops. The statement that a Potato tuber contains sufficient stored food to maintain it for a certain time is not inaccurate in itself, but the implication that manure is consequently of no value while the plant remains young is misleading. The fertiliser encourages the rapid multiplication of roots and thereby conduces to early vigour. Finally, the old-fashioned plan of withholding sulphate of ammonia until earthing-up time has no advantage to compensate for the disadvantage of doing a job in two stages instead of one. I have subjected it to numerous tests, most carefully conducted, and am satisfied that the "omnibus" plan is the better. The suggestion that sulphate of ammonia in the drills might injure the sprouts need alarm no one, at all events, no one who avoids excess. Personally, I do not even trouble to avert an imaginary danger by setting the tubers on end, sprouts uppermost, but lay them on their sides, and to get evenly-spaced, neatly-aligned plants lay them with the sprouts all pointing in one direction. While this is not absolutely necessary in general cultivation, it is workmanlike, and in experimental cultures important, because one knows exactly how many plants can be got into a given area. The proportion of sulphate of ammonia in the mixture does not exceed 1 lb. per square rod, equivalent to 1⅓ cwt. per acre. *W. P. W.*

Lime or Chalk.—The comments of Dr. Marie Stopes, on page 180, are stimulating, as are all her writings. It will not concern her if, in the garden, as elsewhere, she is in conflict with authority. It does, however, concern cultivators in general very greatly that they should have a true conception of the respective values of the different kinds of lime. I have long followed Sir John Russell's dictum that these values should be computed as follows (the figures were taken from the Journal of the Ministry of Agriculture) :—1 cwt. of calcium oxide equals 1 cwt. 36 lbs. of calcium hydroxide, and 1 cwt. 88 lbs. of calcium carbonate ; or, to put matters in another way, 56 lbs. of quicklime, 74 lbs. of slaked lime, and 100 lbs. of carbonate of lime are of equal value. In considering lime values, the majority of cultivators think either in terms of mechanical action or of actual plant food. I am not sure that Dr. Stopes makes it sufficiently clear which she has particularly in mind. In respect to mechanical action, I think it must be accepted that whether pure lime or carbonate of lime is used, fineness of division is all-important where adhesive clay soil is concerned. The pure lime in lumps direct from the kiln ("shell" lime) may be either water-slaked or air-slaked. For the latter I personally have no use whatever. It absorbs carbon-dioxide as well as water and therefore reverts to carbonate, and not only so, but to carbonate in a lumpy state, for the fall is apt to be slow. Months after application to clay land one finds greasy lumps of chalk, with the soil around them as tenacious as ever. It is different, however, if the "shell" is promptly reduced to powder (of course, with production of heat) by damping, and as promptly forked into the soil. It is with a certain amount of trepidation that I throw doubt on the accuracy of so formidable a controversialist as Dr. Stopes, but is she really right that pure lime applied direct to the soil is necessarily slaked automatically, and with absorption of CO_2 becomes carbonate of lime almost of once ? If quicklime is treated as I suggest, I do not think that follows. Certainly if it does Dr. Stopes is right that to use quicklime is uneconomic, because it costs more than the carbonate. But I think that where one has the reduction of stiff soil in mind even carbonate (itself transitory) should be in the finest possible state, for only thus can it work its way with reasonable speed into the minute interstices of the soil and thus bring about that coagulation which is so desirable. On soil already pulverised, and with lime required rather for providing food than for increased friability, I presume that one would do right to prefer the carbonate. There is a third object in liming, and that is reducing acidity in over-manured soils ; here, presumably, the oxide should be preferred—always provided one was sure of its being oxide, not what one fondly believed was oxide already transformed into the carbonate. As a buyer of lime in small quantities in many different places, I may point out that there is by no means so great a general difference in price between oxide and carbonate as Dr. Stopes suggests. So far from the latter being "many times" cheaper, it is generally only about twenty-five per cent. less ; I agree that it ought to be cheaper. May I be permitted to add that I consider Dr. Stopes has done good service in ventilating this important subject in so interesting a way ? *W. P. W.*

Birds and Fruit.—In brief reply to Dr. Durham (p. 143), whose last sentence is absolutely right, I may state that my remark (referring to Doyenné du Comice) "that and other Pears are only luxuries," is rather ambiguous. What I meant was that Doyenné du Comice and some of the other highly cultivated varieties are only luxuries, there being many sorts quite as good *from the food point of view*, because although few may have such a superb flavour (which, after all, is purely a matter of opinion) there are many others quite equal in food value, and probably much better, since Doyenné du Comice is an extremely juicy Pear, and water, although necessary for the health of the body, is scarcely a food. I have only a small garden here, and grow only Jargonelle and Autumn Bergamot, which I have never known to be attacked by birds or even wasps. My Apples are Lord Suffield (one of the best for eating when properly ripe), Dumelow's Seedling, and a Siberian Crab, and these appear to be exempt from bird attack. They suffer little also from woolly aphis, sucker, etc., and when the former shows itself a touch of the paraffin (and water) brush soon puts things right. Were they ever to get into such a state as Dr. Durham's Golden Noble I should promptly cut down and burn them, as I did a Victoria Plum badly attacked by silver leaf some years ago. Bad attacks by pests is generally a sign of unhealthiness in the tree, as I have noticed in the wild Crab Apples in Epping Forest here, which I have sometimes seen heavily laden with woolly aphis, obviously through disadvantage in other ways, such as age, overshadowing by large shade trees, etc. Like Dr. Durham, I should very much like to know how the continental growers manage to raise enough fruit for home consumption and exportation, but I am not in a position to find out. *C. Nicholson.*

CULTURAL MEMORANDA.

BORDER CARNATIONS.

When the soil is fairly dry, established beds of Carnations should be examined, and any plants found to be loosened by frost should be made firm. The beds may then be lightly forked and any losses may be made good at the same time. Experience has proved that in many localities, and especially on wet and heavy soils, it is not safe to depend on planting border Carnations in the autumn, the percentage of losses being too great. Therefore the practice of potting or boxing up the layers in the autumn and wintering them under quite cool conditions is recommended as a safer plan, unless one is living in a very favoured spot.

To keep them healthy during the winter under such conditions, the plants should be kept practically dormant by giving them plenty of air at all times ; frost will not injure them so much as will moist, stagnant conditions. When fine, the lights of the frames should be withdrawn ; protection from heavy rainfall, combined with the maximum amount of air, being the conditions to aim at during the winter. A confined and damp atmosphere is responsible for much disease in Carnations.

The ground, having been deeply dug or trenched some time previously, should now be finally prepared to receive the Carnations. Good drainage is essential, and good, strong, loamy soil is very suitable, for although Carnations are not particular as to soil, if the staple soil is not of the best, good new loam may be added with advantage. Do not apply any more fresh manure when preparing the beds, rather rely on a little stimulant applied as the plants develop and require it.

Border Carnations thoroughly appreciate an abundance of old mortar-rubble, while light dressings of bone-meal, also burnt earth and wood-ash, will assist in promoting strong, healthy growths, if forked into the top layer of soil before planting.

Plant them firmly, from twelve to fifteen inches apart, according to the varieties, and keep the ground thoroughly stirred by hoeing at frequent intervals. *J. G. W.*

WATSONIAS.

If these are grown in a cool house under the same conditions as Freesias or other South African bulbous plants, they will make highly decorative subjects.

The one most readily obtained is W. Meriana alba, generally known as W. Ardernei, dry corms of which are generally offered during the winter.

They require fairly large pots if they are to be effective. Five corms should be placed in each seven-inch pot, which may be stood in a cold frame until the plants require more space, when they may be removed to a cool house ; well-grown plants should attain a height of five to six feet.

Watsonias have been very much neglected, but it is now possible to get a number of species and varieties, in varying shades of red, rose and pink. In the south they are hardy in borders at the foot of warm walls, while if so desired they may be raised from seeds and will flower in their second or third year. *J. C.*

DOMINION AND COLONIAL CORRESPONDENCE.

THE FINEST FLOWERING TREE.

Mr. Clarence Elliott, in his delightful account of his trip to Chili and the Andes, tells us that he saw in Havana "in its full glory, what is probably the finest flowering tree in the world, the Flamboyant (Poinciana regia)." (Vol. LXXXII, p. 426). It is indeed beautiful, for I saw it some years ago in Durban when I expressed the opinion held by Mr. Elliott. I was asked whether I was satisfied that it was more beautiful than the red-flowered Gum, (Eucalyptus ficifolia). I hesitated! Is the Eucalyptus more beautiful than the tree whose flowers resemble those of the Horse Chestnut, mentioned by Mr. Clarence Elliott? It is certainly more striking, more dazzling, more ravishing, but it is not so noble. I am not writing this in a querulous mood; I am just wondering which is the most beautiful flowering tree. I almost envy Durban its glory for I have tried to grow Poinciana regia several times, but it is too cold here. Here we have a good specimen of Erythrina Crista-galli, about twenty feet high and well proportioned. It is indeed a thing of beauty when in flower, but it is generally more of a flowering shrub than a tree. E. caffra is a large tree and very striking, but I have not seen it appealingly beautiful. In Natal, where it is at home, it is much admired. Then we have here a splendid specimen of Sterculia platanifolia which for the last six weeks has been arrayed in all its glory. This tree I dare not put in the competition against the Poinciana and the red-flowered Gum because it loses its magnificent foliage just as it comes into flower, when it is a veritable tower of flame. Some of the Acacias are not unworthy candidates for the honour, but I suppose Jacaranda mimosaefolia must be ruled out, as the colour has not the same fascination as the reds and yellows, but it is a glorious plant. Returning to the Flamboyant, I was struck with Mr. Elliott's description of its foliage. He gives it as "an indescribably rich and beautiful velvet-green." Evidently the trees in Havana put on richer apparel than those I saw, for I thought that the foliage was just a trifle too pale. But which is the most beautiful tree in the world? I give it up! *C. E. Butters, Prince Alfred's Park, Port Elizabeth, South Africa.*

LIABILITY FOR DAMAGE BY FIRES.

What legal obligations may a man incur if a fire on his premises spreads and damages crops and property belonging to some third person?

In a case on this point A owned property on which stood some trees, hedges, fences and gates. B owned the adjoining land. Owing to the negligence of B in lighting a fire on his property, in such a way and at such a time, when, owing to the state of the wind, it was dangerous to do so, the fire spread and destroyed the trees, hedges and fences, etc., belonging to his neighbour A. Was B liable for the damage done as a result of a fire having been kindled on his own land?

In this judgment it was said that the ancient law in custom of England was, that a person on whose premises a fire originated, and which afterwards spread on to his neighbour's property and damaged it, was liable to compensate his neighbour for the loss he suffered.

Further, it is an established legal rule that where the fire is caused by a servant's negligence, the master will be responsible for his servant's carelessness.

It is provided by Act of Parliament, however, that no action may be maintained against any person in whose "house or chamber" a fire shall accidentally begin, nor may any compensation be demanded from him for any damage it does. To the words "house or chamber," a later Act adds "stable, barn or other building," and also "or on whose estate," an expression which has been held to include any land, even though not built on.

What is the meaning of the word "accidentally"? Does it mean merely not wilful, or does it include fires caused by the negligence or carelessness of someone? The Court decided that the term included both fires caused by the wilful act of the defendant, and those occasioned by some negligence on the part of the defendant or his servants.

To sum up then, if the fire which has caused the damage begins "accidentally" no liability exists, but if it was wilfully or intentionally kindled, or arose owing to some negligent act of the owner of the land or of his men, then he will be liable for the damage it does to his neighbour's property. *H. A. Sharman.*

THE SIMAR ROTO-TILLER.

The continual wet weather during the past winter has thrown many gardeners in arrears with the cultivation of the soil, and it is a source of worry to many, where labour is short and hand-digging has to be resorted to so late in the season, when so many other things call for attention. Since I mentioned the Simar Roto-tiller in *The Gardeners' Chronicle* (see pp. 76 and 114), I have received enquiries respecting it which have prompted me to write of its merits.

In my opinion it is the best implement for the successful cultivation of the soil, as it does the work of digging and cultivating in one operation, leaving the ground ready for use. Those who possess a machine at the present time need not worry if their land is still uncultivated, and they can afford to wait until the ground is dry before using this implement, after which planting or sowing may be done at once, as no raking or levelling will be required.

The Simar Roto-tiller has superseded the plough, and on heavy land for kitchen garden crops it is practically essential where large quantities of vegetables have to be grown.

Being situated on heavy soil, overlying clay, I found that the use of the plough was very unsatisfactory for market garden crops, and so I took advantage of the offer of a demonstration on the land with the Simar Roto-tiller. The demonstrator put it to all kinds of work. The roughest piece of ground was selected and was cultivated to everybody's satisfaction; next, a cinder road was dug, with no bad results excepting one broken tine, which is easily replaced in a few seconds; the tines are adjusted in such a manner that they break under undue pressure, thereby preventing breakage of the actual machine.

In spite of the rather high price of this machine, I purchased one some three years ago, and immediately used it on a piece of land which had been ploughed, but which, owing to dry weather, could not be prepared for planting Brassicas, being so lumpy and hard. The Simar Roto-tiller reduced it to a fine tilth; the Brassicas were planted and watered in, and I have yet to see a finer crop. As with all motor-machines, one expects to have little difficulties at times, but generally it gives very little trouble; it is easily managed by any intelligent workman who may be mechanically inclined; it is cheap to run, for no tax is required, and it is possible to prepare a piece of ground ready for sowing at short notice, often defeating the weather at a critical time. Again, the makers claim that it may be used for various other works, but one need only deal with it from the cultivation point of view. On heavy soil it will cultivate to a depth of twelve inches, and I believe on sandy soils to eighteen inches. If, however, a greater depth is required, trenching may be done, by making trenches three feet wide and one spit deep, after cultivating with the Simar; the bottom of the trench may then be cultivated and this operation may be repeated until all the required land is finished. Quite small pieces may be worked, providing there is space for turning, and any piece over one yard wide is done with ease.—*A. Falconer, Cheadle Royal Mental Hospital.*

FRUIT GARDEN.

MULBERRIES.

The Mulberry is one of the latest fruit trees to start into growth, and it may be planted until the end of March.

The Black Mulberry is a very slow growing tree and it often lives to a great age, while it is seen at its best as a standard tree on a lawn, where also the fruits will have a grass carpet to fall on when fully ripe.

These fruits are not fit to use until they are on the point of, or have actually fallen, when, although slightly acid, they are sometimes eaten as dessert, but their proper use is for cooking, which brings out their peculiarly piquant flavour.

Ground for Mulberry trees should be thoroughly prepared by trenching to a depth of three feet, and to ensure a good start some manure should be incorporated with the staple soil, while a small quantity of fine rich soil may be worked in amongst the roots at planting time. When growing them in grass, a circle at least five feet in diameter around each tree should be kept cultivated and free from grass until the trees have become fully grown and mature. *T. E. Tomalin.*

VEGETABLE GARDEN.

MUSHROOMS.

It is often difficult to procure material suitable for growing Mushrooms, but where fresh horse manure is available, beds should be prepared whenever possible. It is dangerous to use manure from horses that are being medically treated; the most suitable is that which contains a good percentage of short, straw litter.

The manure should be put in a heap on the floor of a covered shed that is open at the sides, and while it is heating it may be turned occasionally to liberate the ammonia, after which it may be placed in ridges and allowed to dry if it is moist. Having been turned several times, it may be thrown into a conical heap to heat again before making the bed.

The ideal bed is one in which the manure is of a spongy nature; in this condition it seldom fails to produce good crops, provided that the necessary cultural details are followed.

There is much difference of opinion as to the best place in which to grow Mushrooms; elaborate houses are often used, but any shed where an even temperature may be maintained is suitable. If sheds are not available suitable positions outside may be used.

Make the beds four feet wide and two feet six inches high, with two sloping sides, and insert the spawn when the temperature has declined to between 85° and 90°, covering it with good maiden loam a few days later, to a depth of two inches. The bed, if in the open, should be covered with six inches of straw, and a framework of roofing felt.

Personally I think that outside beds are equally as productive as those in sheds, while when the crop is on the decline, if the beds are watered with warm water, to which has been added two ounces of common salt to the gallon, it is remarkable the length of time these outside beds continue to produce good Mushrooms. *A. F.*

TRADE NOTE.

Messrs. Joseph Fison and Co., Ltd., of Ipswich, were first honoured with their Royal Warrant as Fertiliser Manufacturers to King Edward VII in 1901. The Warrant was renewed by His Majesty King George in 1911, and in the recent revision of appointments, Messrs. Joseph Fison and Co., Ltd., have been placed on the new list, and have just received their new Royal Warrant.

SOCIETIES.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

At the meeting held on Friday, March 9, the members of Committee present were Messrs. Hy. Astley Bell (in the chair), J. B. Adamson, A. Burns, B. Collins A. Coningsby, John Evans, Captain W. Horridge, A. Keeling, G. V. Llewelyn, D. McLeod and H. Arthur (Secretary). Mr. J. Keeling was invited to sit with the Committee.

Awards of Merit.

Cymbidium Auriga var. Tertium, Brasso-Cattleya Bianca var. Belle, Odontoglossum Carola var. Tortica, and Miltonia Bleuana La Perle var. Magna.—From the Hon. G. E. Vestey.

Cypripedium Vesper var. Veronica.—From Mrs. Bruce and Miss Wrigley.

Burrageara Windsor.—From J. B. Adamson, Esq.

Laelio-Cattleya Zeno, Llewelyn's var.—From G. V. Llewelyn, Esq.

Awards of Appreciation.

To Brasso-Cattleya Thorntonii alba, Llewelyn's var., Dendrobium nobile var. Purple Queen, and D. nobile var. Llewelyn Knight.—From G. V. Llewelyn, Esq.

Odontoglossum Wilckeanum var. xanthotes, Odontioda Redwings (parentage unknown), and Zygocolax Amesianus gigantea.—From J. B. Adamson, Esq.

Cultural Certificates.

To Mr. J. Howes, for Cattleya Enid alba; Dendrobium Wardianum and Coelogyne intermedia; and to Mr. G. V. Llewelyn for Laelio-Cattleya Zeno.

Groups.

J. B. Adamson, Esq., Blackpool (gr. Mr. J. Howes), staged a group to which a Gold Medal was awarded. It included Odontoglossums in variety, Odontioda Bonar Law, O. Red Wings, O. Cobbiae var. Mars, and O. Collinge var. Adrian; Cattleya Mossiae Wagnerii, C. Enid alba, C. Schröderae var. Golden Glow; Laelio-Cattleya General Allenby, and L.-C. Eudora; Dendrobium Wardianum and D. Infundibulum.

The Hon. G. E. Vestey, Birkdale (gr. Mr. B. Collins), staged a group of Cymbidiums to which a Silver-Gilt Medal was awarded. Varieties of C. Alexanderi, C. Pauwelsii and C. Auriga, with Odontoglossum Carola var. Tortica and C. Pescatorei were shown.

Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. A. Burns), were awarded a Silver Medal for a group in which were Lycastes of the Skinneri section, including delicatissima, Pan, ingens, Glory, and Apple Blossom, L. Imschootiana, and L. lasioglossa, with several Miltonias.

Mr. John Evans, Colwyn Bay, staged a group to which a Large Silver Medal was awarded. This contained Odontoglossum Golden Glory, O. Pescatorei, O. Margarita var. Perfecta, Dendrobium Sunray, D. Sensation and D. Cybellense; with Cypripediums in great variety.

Messrs. A. J. Keeling and Sons were awarded a Silver Medal for a group of Odontoglossum eximium var. Fascinator, O. Empress Eugenie, Odontioda Sir Douglas Haig, O. Borda and O. Ducia, Dendrobium Renown and D. Gatton Monarch.

Captain W. Horridge, Bury (gr. Mr. A. Coningsby), contributed Cypripedium Perseus, Odontioda Maureen and Dendrobium Snowball.

CARDIFF GARDENERS'.

At the meeting held on March 13, Mr. W. Bennett occupied the chair. The meeting was largely attended by members, whose wives were also specially invited to hear one of the most interesting and instructive lectures given during the session.

The lecturer was Mr. H. R. Farmer, of Cardiff Castle Gardens, and his subject was "Fruit Bottling." Mr. Farmer not only described the whole process in detail, but illustrated his lecture with all the necessary appliances as well as practically all kinds of fruit bottled by himself, some of which were bottled so far back as 1910, and appeared to be in excellent condition.

Some amusement was caused by one bottle labelled, "What is it?" After much speculation it turned out to be Tomato Golden Nugget. Mr. Farmer dealt on the waste of fruit that occurs when there is a glut, and urged that waste could be prevented by bottling, and at a reasonable outlay.

Mr. M. Joye opened the discussion, and it was carried on by the ladies and other members. At the close a hearty vote of thanks was accorded to Mr. Farmer, who was prevailed upon to give a further lecture on "Bottling Vegetables, and Jam-making by Sterilizing," in the coming session.

The class for the best dish of ten seed Potatos, sprouted, was well filled. Mr. Rockney won the prize given for the greatest number of points for non-competitive plants during the session. This member exhibited at every meeting and secured maximum points on all occasions but one. The Annual General Meeting is to be held on March 27.

GENERAL BULB GROWERS' OF HAARLEM.

The different Floral Committees have awarded the following forcing certificates to Tulips and Daffodils during their winter sessions of 1927-28.

Early Forcing Certificates.

Narcissus (Barrii) Sunrise.—White perianth, yellow base, short cup, golden-yellow, orange-red bordered. Shown by Messrs. Warnaar and Co., Ltd., at Sassenheim, January 30, 1928.

Narcissus (bicolor) The First.—Stout, yellow trumpet, perianth softer coloured. Shown by Messrs. Van Zonneveld Brothers and Messrs. Philippo, Ltd., at Sassenheim, January 23, 1928.

Narcissus (bicolor) Victor Hugo.—Creamy-coloured perianth, formed like a star, golden-yellow, strongly frilled trumpet.—Shown by Messrs. W. J. Eldering and Son, Ltd., at Overveen, January 30, 1928.

Narcissus (bicolor) Wilson.—Perianth paper-white, trumpet lemon-yellow, strongly frilled. Shown by Messrs. den Older Brothers, at Leiden, and by Mr. C. Vianen, at Rijnsburg, January 30, 1928.

Narcissus (yellow trumpet) Golden Harvest.—Tall, self-coloured, yellow trumpet variety. Shown by Messrs. Warnaar and Co., Ltd., at Sassenheim, January 23, 1928.

Forcing Certificates.

Early (single) Tulip Golden Glory.—Self-coloured, golden-yellow, oblong form, like Yellow Prince. Shown by Messrs. de Graaff Brothers and Messrs. S. A. van Konijnenburg and Co., Ltd., at Noordwijk, January 2, 1928.

Early (single) Tulip Solita.—Striking orange. Shown by Mr. J. P. Passchier, at Noordwijk, January 23, 1928.

Narcissus (Poetaz) White's Hybrid.—Large, pure-white perianth, small, yellow cup. Shown by Messrs. H. de Graaff and Sons, at Lisse, February 13, 1928.

Narcissus (White Trumpet) Roxane.—Pure white perianth, creamy-white trumpet, wide-spread, strongly frilled.—Shown by Messrs. P. van Deursen, at Sassenheim, February 20, 1928,

GUILDFORD AND DISTRICT GARDENERS'.

"The Lure of the Rose" formed the theme of a fascinating address given before the members of this Association by Mr. William Harvey—a member of the N.R.S. Council and President of the Guildford Rose Society.

Mr. Harvey's address covered a very wide field. He stated that the Rose had been referred to by Sappho as "The Queen of Flowers" so long ago as 500 B.C. Mention was made of many ancient practices in the cultivation and pruning of Roses. One method of pruning recommended by Theophrastus, 300 B.C., was to set fire to the trees after flowering. The association of the Rose in the national life and customs in Babylon, amongst the Greeks, in Holy Writ, in Egypt and Rome, were described, and instances were given to show that the admiration of the Rose was often carried to excess. Nero spent £30,000 on Roses for one feast, at a time when the blooms had to be cultivated in, and brought from, Egypt. Many examples of quaint customs connected with the Rose were detailed. The lack of fragrance in the Rose is by no means a modern experience, for Pliny held the opinion that a scentless Rose was not a Rose at all. Mr. Harvey contended that the Rose of the present day is the most truly perpetual flower we possess. It will grow in almost any soil, and while it will often live when neglected, it well repays care and cultivation.

A very cordial vote of thanks was accorded to Mr. Harvey on the motion of Mr. Stedman, supported by the President, Alderman W. T. Patrick, J.P.

ANSWERS TO CORRESPONDENTS.

Composition of Blood Manure, etc.—*M. C.* (1) The percentage composition of the serum or watery part of the cow's blood, or other animals of that kind is, water 90; nitrogenous substances, 8 to 9; fat and other matters, 2 to 1. The blood corpuscles contain 56·5 per cent. of water, and 43·5 per cent of solids, mostly nitrogenous organic matter. The ash of dried blood is rich in phosphates and contains some chloride of potassium and phosphate of potassium. Dried blood (not burnt) contains about 15½ per cent. of nitrogen. Thus it will be seen that this is chiefly a nitrogenous manure. It is inferior only to nitrate of soda. (2) Calcium cyanamide or nitrolim is purely a nitrogenous manure with small quantities of sulphur, phosphorus, and 21 per cent of caustic lime. It contains 57 per cent. of pure calcium cyanamide, and in this is 17 to 20 per cent. of nitrogen. Ammonium sulphate and calcium cyanamide are about equal in value as a manure. (3) Nitrate of lime is also a nitrogenous manure, and contains 75 to 77 per cent. of calcium nitrate, the rest being water and a small amount of other substances. It contains 13 per cent. of nitrogen in a readily available form, and, nitrogen, for nitrogen is of equal value to sodium nitrate. It is sold in barrels to keep it dry, because it is worse than the nitrate of soda for absorbing moisture from the atmosphere, and becoming lumpy or forming cakes. When some of it has been used in a garden, presumably the remainder would be all right if tightly closed up again. It is more easy to distribute over the ground if mixed with ashes first. This is the nitrogenous manure to use if quick action is desired, but if slower action would suit the case better, then the calcium cyanamide should be used.

Poison in Soil.—*A. R.* We have submitted the sample of soil to an analyst, who reports that he is unable to trace the presence of either copper or arsenic poisons in the soil. There is, however, an excessive amount of iron present, some of which is in the ferrous or unoxidised condition, due possibly to incomplete drainage, which is probably the cause of the failure of your crops, for the soil is well supplied with both lime and phosphates.

Vine Border.—*F. H.* Give your border, where the six vines of Mrs. Pince are planted, a dressing of lime, and two or three dressings of sulphate of potash during the growing season at the rate of two ounces to the square yard, the last dressing to be given when the berries commence to colour. Avoid rich stimulating manures as these would encourage gross growth, which prevents the wood from ripening properly; do not overcrop the vines.

Communications Received.—E. H. T., W. J.—J. F. O.—T. A. L.—J. K.—R. A.—R. G.—J. C.—E. C.—W. D.—A. G.—J. F.—J. P. E. E. B.—T. R.

THE Gardeners' Chronicle

No. 2153.—*SATURDAY, MARCH* 31, 1928.

CONTENTS.

- Alpine garden—
  - Campanula planiflora 226
  - Campanula pulloeides 226
  - Erodium carvifolium 226
  - Ionopsidium acaule 226
  - Myosotis alpestris... 226
  - Saxifraga bryoides 226
- Anagallis tenella ... 235
- Bulb garden—
  - Watsonia Meriana var. O'Brienii ... 226
- Butler, Mr. J.... ... 222
- Commelina coelestis... 235
- Conifers, notes on ... 231
- Escallonia Edinburgh 235
- Fallugia paradoxa ... 234
- Fertiliser, a new garden 234
- Flower garden—
  - Salvia splendens as a standard ... 228
- Forestry—
  - Pinus contorta or P. Murrayana ... 232
- "Gardeners' Chronicle" seventy - five years ago 223
- Halifax, interest in gardening at 222
- Hardy flower border—
  - Papaver pilosum ... 228
  - Tiarella cordifolia ... 228
- Kew, alpine plants at 221
- Lime of chalk... ... 234
- Mycorrhiza, the role of, in plant growth ... 230
- National Rose Society 221
- Obituary—
  - Deegen, F. 239
  - Huhle, J. 239
  - Knight, G. A. ... 239
  - Morris, H. G. ... 239
- Orchid notes and gleanings—
  - Dendrobiums ... 232
- Plants new or noteworthy—
  - Meconopsis superba, King 229
- Playing fields for Kent 222
- Primula, the genus ... 235
- Ridley, Mr. H. N., honour for 222
- Roses, mulching ... 235
- Roses, pruning ... 234
- Societies—
  - Birmingham Gardeners' 238
  - Floral exhibition at Antibes 238
  - Guildford Rose ... 237
  - Manchester and North of England Orchid 238
  - Professional Gardeners' 239
  - Reading Gardeners' 238
  - Royal Caledonian ... 238
  - Royal Horticultural 236
  - Salisbury and District Gardeners'... 239
  - Western Commercial Horticultural ... 238
- Strawberries, failures with... 234
- Trees and shrubs—
  - Cupressus sempervirens var. pyramidalis 227
  - Daphne caucasica ... 227
  - Raphiolepis japonica var. Delacouri ... 227
- Trees, pruning stunted 234
- Vegetable garden—
  - Spring Cabbages ... 235
- Violas, a revision of ... 230
- Week's work, the ... 224
- Wisley, notes from ... 227

ILLUSTRATIONS.

- Butler, Mr. J., portrait of 222
- Cupressus sempervirens var. pyramidalis at La Mortola 225
- Daphne caucasica... 227
- Meconopsis superba 229
- Myosotis alpestris... 223
- Pinus contorta, 232, 234 ; P. Murrayana 233
- Pinus Thunbergii, branch of 231
- Watsonia Meriana O'Brienii 226

Average Mean Temperature for the ensuing week deduced from observations during the last fifty years at Greenwich, 46.1

Actual Temperature.—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London, Wednesday, March 28, 10 a.m. Bar. 29.7. Temp. 46°. Weather, Overcast.

National Rose Society.

No special garden flower is more popular than the Rose and no special floricultural society receives such enthusiastic support as the National Rose Society. Founded in 1876, the early history of the Society has been told many times by those who were present at its early exhibitions, but alas ! few now remain of that brave and enthusiastic band of rosarians who laid the foundations of what is now, we believe, the largest special floricultural Society in the world. Perhaps it is because there are so many excellent rosarians in these days that we do not appear to have the outstanding personalities of other times. True, the raisers have maintained a high position on the roll of fame, but we miss such striking personalities as those of Dean Hole, Rev. H. H. D'Ombrain, Edward Mawley, E. B. Lindsell, Rev. Page Roberts, George Paul, William Paul and and the Rev. J. H. Pemberton. There were giants in those days, and although the Society's exhibitions are far more extensive than formerly and the exhibits generally are of higher quality, no one appears likely to break the record established by Mr. E. B. Lindsell who was the amateur champion rosarian from 1890 to 1893 ; again in 1895 ; from 1897 to 1908, and again in 1910 and 1911—a wonderful performance. Royal patronage has done much for the National Rose Society, but we believe that the great increase in membership is due chiefly to the useful publications the Society has distributed free to its members. These are brought up to date at frequent intervals and are of handy size. The premier publication, however, is the *Rose Annual,* now a weighty volume of 318 pages, freely illustrated by half-tone figures, diagrams, and sixteen illustrations in colour, together with a photograph of Princess Mary, Viscountess Lascelles as a frontispiece. The articles in the 1928 issue cover a very wide field, from the Raising of Roses to Roses for the Rock Garden and Roses by the Waterside. Others deal with the Timing of Roses under glass, Roses in the Landscape, Rose Growing in Scotland, Rose Garden Design ; some interesting "Memories," by Mr. A. G. Soames, the oldest member of the Society ; and descriptions of the exhibitions held in 1927. Except that there is room for improvement in the reproductions in colours, we have nothing but commendation for the *Rose Annual* of 1928. But publications are only a part of the activities of the National Rose Society. During the present year it will hold a spring show at the R.H.S. Hall on April 20 ; the great summer Rose show at the Royal Hospital Grounds, Chelsea, on June 29 and 30 ; a provincial show at Saltaire on July 11 and 12 ; an exhibition of new Roses at the R.H.S. Hall on July 24, and finally, an autumn show on September 7 and 8. Further, there is the International Rose Conference on July 2, at Vincent Square, at which Rose Species, Genetics of the Rose, the Future of the Rose, the Future of the Rose as a Decorative Flower and Diseases of the Rose, will be discussed. The programme in connection with the Conference includes a dinner at the Savoy Hotel, on July 2, a visit to Kew on the following day, visits to Colchester Rose Nurseries on July 4, and to the Rose Nurseries (Market) in the Lea Valley, on July 5. The establishment of a Rose Trial ground is another piece of useful work the Society has undertaken, and affords further evidence of the enterprise of the Council. A site has been chosen at Haywards Heath, and this will be ready for the receipt of plants during the present year. No new variety, unless in commerce, will bear a name in the Trial ground ; it will be under number only. The award of a Gold Medal to new Roses will continue as at present, but a special award will be arranged to be granted to those varieties which, after trial, are considered worthy The Trial ground will be under the supervision of the Society's Secretary, Mr. Courtney Page. It will be seen, therefore, that the National Rose Society has wide interests within the realm of the Rose, and consequently makes an appeal to all classes of rosarians in all parts of the British Isles, as well as to those within the far-flung bounds of Empire, in addition to many in foreign lands.

Alpines at Kew.—In the Alpine House at Kew are to be seen many early-flowering rock garden gems, including various Saxifragas, Primulas, Anemones and bulbous plants. There are fine pans of the beautiful Saxifraga Grisebachii, Wisley variety, and large, dark-leaved cushions of S. oppositifolia grandiflora which are in some instances almost covered with large, rose-purple, nearly sessile flowers. This genus is also represented by S. hybrida "Gem," whose small, close cushions are surmounted by faintly lilac-tinted, white flowers, borne singly on slender stems ; and the beautiful, large, white-flowered S. tombeanensis. Amongst Anemones there are plants, bearing masses of blooms, of Anemone blanda atrocoerulea and A. Hepatica alba, while Tulips are to be seen in variety. There is the yellow Tulipa Kolpakowskiana, the orange-scarlet T. praestans, Tubergen's variety, the small T. pulchella and the lilac-rose T. humilis ; while of the several forms of T. Kaufmanniana, Brilliant and Gaiety are the most noteworthy, the former having rich red blooms, and the latter cream-coloured, orange-throated ones, that are shaded on the outside with rose-red. Tecophilaea cyanocrocus, with vivid blue flowers, the dainty Cyclamen coum var. album, Androsace carnea variety Lagerii, and the comparatively rare Heloniopsis japonica are other attractive features of the house, while amongst the bulbous plants were fine pans of Narcissus minor, Scilla sibirica var. alba, Muscari conicum Heavenly Blue, Hyacinthus azureus, Puschkinia scilloides, Scilla bifolia and S. sibirica, and Chionodoxa Luciliae and its fine form known as var. sardensis. Fritillaria pudica is an attractive species from north-west America, with large, golden-yellow blooms that in size are out of all proportion to the diminutive foliage, while another uncommon subject that is to be seen in bloom at the present time is Hermodactylus tuberosus. This has slender, Iris-like flowers which are more quaint than attractive, for they are green in colour with falls of deep, velvety, blackish-green.

Forest Accidents.—To the town-dweller the life of a forester appears to be an ideal one, but there are risks to be run in the forest just as there are in the workshop or factory. It is only, however, when forest accidents end fatally that we hear about them, the minor ones, occurring as they do in remote districts, being rarely chronicled. A little while ago, in a forest in West Aberdeenshire, a woodman was felling a tree. Feeling that one more stroke was necessary, he had his axe poised above his head when the tree fell right on to the axe and cleft the poor man's head nearly in twain. Another such simple accident brought about the death in Aberdeen Royal Infirmary of John Clark Duguid, Marykirk, Kincardineshire. From the inquiry held before a Sheriff and jury in Aberdeen on the 21st inst., it would appear that Duguid, his father and two brothers, were felling and snedding trees in Pitcarry Wood, near Marykirk. Deceased was doing the snedding, when his father heard him cry, and hastened towards him. He found him standing beside a felled tree with the axe in his hand and a gash in the boot of his right foot, from which blood was oozing. He explained to his father that a branch had sprung back from the tree and deflected the course of the axe on to his foot. The injured man was taken home, and for some days the wound was not considered serious, but septic poisoning set in and the local doctor ordered removal to Aberdeen Infirmary. There the wound was re-opened. No pus was found, but Duguid became delirious and developed an obstruction in the bowel. An operation was decided on, and the obstruction was removed. The wound was then closed, but just as the last stitch was being put in the man ceased to breathe. From the evidence given it was apparent everything was done that medical skill could do, and the verdict returned was that death was due to blood poisoning brought about by an injury.

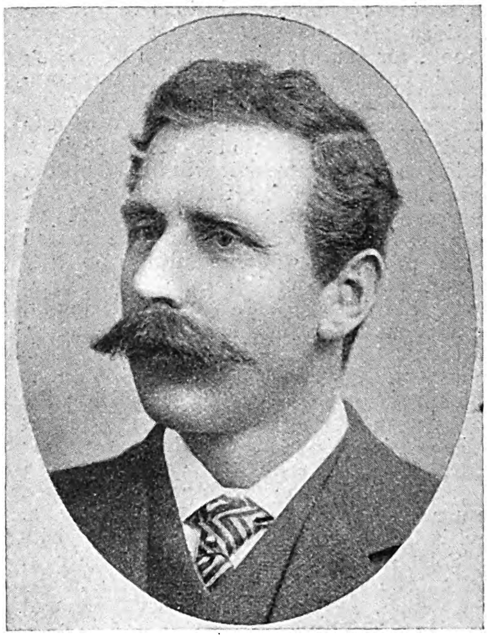
The R.H.S. Daffodil Show.—The schedule of the Daffodil Show, to be held at the Royal Horticultural Society's Hall, Westminster, on April 17 and 18, may be obtained on application to the Secretary, R.H.S., Vincent Square, London, S.W.1. In the past, the prizes for this show were provided partly by the Society and partly by subscriptions from Daffodil enthusiasts, but this year we learn that the Society is providing the whole of the prize-money, approximately £150, together with a Challenge Cup and numerous Medals. There are several new features in this year's schedule. In addition to the open classes, it is observed that there are special sections for amateurs and market growers, and also one for novices who have never won a first prize at an R.H.S. Daffodil Show, while another important feature is the section for amateurs from which very expensive varieties are excluded; only those varieties may be shown which have been listed in a retail catalogue at a price as low as a specified sum, which varies with the class. There are special classes for Daffodils arranged in a decorative manner, and a Banksian Medal is offered for the best bloom shown in the competitive classes.

Tasmanian Appointment.—Dr. Alexander Nelson, formerly of Bardowie, near Glasgow, has been appointed Superintendent of Research for the Ministry of Agriculture of the Tasmanian Government. His work will be to supervise the technical officers of the Department, and before entering upon his duties he was commissioned to visit the principal research stations in Great Britain, Denmark, Holland, Scandinavia, Belgium, the United States and New Zealand. Dr. Alex. Nelson has had a distinguished career. After leaving school, he attended the West of Scotland Agricultural College and Glasgow University. During the war he served in France with the Royal Engineers, and after the termination of hostilities, he graduated as Bachelor of Science at Glasgow University, and received the National Diploma of Agriculture. From Glasgow he went to Cambridge University as a research scholar of the Empire Cotton-growing Corporation, and on leaving there was appointed to the scientific department of a Scottish seed-growing firm. As a result of his work in this capacity he received the degree of Doctor of Philosophy in the Faculty of Science, at the Edinburgh University.

Marketing Apples and Pears.—The Report on the Marketing of Apples and Pears under the Merchandise Marks Act, 1926, has been presented by the Standing Committee set up by the Ministry of Agriculture and Fisheries—the Secretary of State for the Home Department and the Secretary of State for Scotland, acting jointly—has now been presented. Copies of the Report will shortly be obtainable through any bookseller or directly from His Majesty's Stationery Office, Adastral House, Kingsway, London, W.C.2.

Demonstration Gardens in Canada.—We learn that the establishment of demonstration gardens throughout the Dominion of Canada is proceeding apace, the centre of these activities being Ontario, where the movement originated. The object of these gardens is to bring to the notice of the public the types of plants best suited for culture in each locality, and to generally encourage horticulture throughout the country. The gardens take various forms, for besides those which are planted with plants of general garden decorative value there are others that are devoted solely to the culture of distinct groups of plants, such as Paeonies, Roses, etc. The majority of the gardens are laid-out and maintained by the various horticultural societies, and are endorsed by the Canadian Horticultural Council. The gardens vary in size from one-quarter-of-an-acre to two acres, according to the districts in which they are situated. The first of these demonstration gardens, that at St. Catharines, Ontario, was established some twelve years ago. This garden has been, and still is, the source of endless pleasure alike to citizen and tourist; it is a gift of the late W. B. Burgoyne, an ex-mayor of the city, who made ample provision for its maintenance. Other popular stations are those at Hamilton, which consists of a Rose garden of about two acres, and is visited by at least one hundred thousand people each year; at Markham, some sixteen miles north-east of Toronto, is a Rose garden that contains about two hundred varieties and some fifteen hundred plants in all; at Galt is a large Paeony garden; and there is another one devoted to the same group of plants at Lindsay. The gardens, except the one at St. Catharines, are maintained from the funds of the various societies, and the plants are donated, not only by the nurserymen of Canada and of the United States, but also in large numbers by those in Europe. For the establishments to receive the recognition of the Canadian Horticultural Council, certain rules have to be observed. The gardens have to be kept in good condition, and all the plants must be correctly and legibly named, while in recognition of the generosity of the nurserymen, the names of the donors are included on the labels. The progress that horticulture has made in Canada during recent years is remarkable, and the enthusiasm of the public unbounded, and it was a great tribute to Canada when the Premier, in a recent speech after his visit to the Dominion, stated that the beauty of the homes and gardens of the people of all classes, had appealed to him very forcibly.

Mr. John Butler.—Full of ambition, Mr. John Butler left his home at Kidlington, Oxfordshire, when sixteen years of age, and entered the service of Messrs. J. Veitch and Sons, at Chelsea. On leaving home, he told his parents that some day he would be gardener at one of the biggest places in the country. He worked in almost all the various departments of the Chelsea establishment, including the offices and seed warehouses. Having gained considerable and varied experience, he was offered the position of foreman in the order office and packing shed. This, however, he refused, because he was desirous of becoming a gardener in a private establishment. Soon afterwards he secured a position under Mr. Metcalfe, at Elsham House, Grantham, and was fortunate in doing so, as Mr. Metcalfe took a great interest in his young men, and on two evenings a week gave them lessons in botany and geometry. His next post was at Brantingham Thorpe, East Yorkshire, the seat of Christopher Sykes, Esq., where Mr. Kingston was gardener and land steward. Here Orchids were a prominent feature, but Gardenias were also finely grown, while flower gardening and floral decorations were carried out efficiently. Four years' experience at Brantingham Thorpe fitted him for a position as foreman at Laton Hall, Welshpool, the residence of J. Naylor, Esq. The gardens at Laton were quite up to date, much money was spent on their upkeep, the glass department was extensive, and trees and shrubs fine features of the grounds. Later, Mr. Butler became foreman at Stanwick Park, the residence of the Duchess of Northumberland, with whom he remained for four years before he became gardener to the Earl of Ancaster at Normanton Park, Rutland. The Countess of Ancaster was a keen gardener, and gave Mr. Butler every possible assistance in the conduct of his work in this large establishment. When at Normanton Park, Mr. Butler exhibited collections of Begonias, Apples and Potatos at meetings of the Royal Horticultural Society and he still treasures the medals he was awarded for these exhibits. After spending ten years at Normanton Park, he became gardener to Miss Alice de Rothschild at Waddesdon Manor, and when, after considerable service in charge of one of the "biggest places in the country," he retired, Miss de Rothschild made him a present of £550. On his retirement, Mr. Butler was able to purchase The Cottage, The Moors, Kidlington, the old home of his family, where he now lives, thoroughly enjoying himself in the cultivation of about half-an-acre of garden, wherein he makes special features of Roses and various kinds of bulbous plants. Next to his garden, there is nothing he loves better than a chat about old times with someone who remembers the conditions obtaining in gardens from twenty-five to fifty years ago.



MR. J. BUTLER.

Mesembryanthemum: Correction of Gymnopoma, N. E. Br.—Mr. N. E. Brown writes:—"Unfortunately, until too late for alteration, I did not discover that I had overlooked that in the *Journal of the Botanical Society of South Africa* for 1927, but not published (I believe) until January, 1928, Mrs. Bolus had founded the genus Skiatophytum upon the same plant as I founded Gymnopoma, so that Gymnopoma tripolium, N. E. Br. must now become Skiatophytum tripolium, L. Bolus."

Honour for Mr. H. N. Ridley.—The Frank N. Meyer Medal has been awarded to Mr. H. N. Ridley, C.M.G., F.R.S.; this medal is awarded for distinguished service in plant introduction, and was presented to Mr. Ridley on March 14, by the American Consul General, on behalf of Dr. D. Fairchild, President of the American Genetic Association, in recognition of Mr. Ridley's work in establishing the Para Rubber tree in the Oriental Tropics. The award of the Frank N. Meyer Medal is entrusted to the President of the American Genetic Association by the staff of the Office of Foreign Plant Introduction, United States Department of Agriculture.

Playing Fields for Kent.—The Annual Report of the Kent Playing Fields Association states that over £11,000 has been subscribed for the provision of playing fields for elementary school children. The donations range from £1,912, received from the Kent Brewers' Union, to pennies collected by school children. Various gifts of land, valued at £8,000 have been received for Ramsgate, Chelsfield, Orpington, Maidstone, Rochester, Walderslade, Tunbridge Wells and Canterbury; loans and grants, to the total of £1,311 have been recommended. The scheme for the provision of these playing fields has been commenced at Rochester, where a model playing field is to be laid-out at an estimated cost of £1,500, and the provision of similar fields at Canterbury, Dartford and Tunbridge Wells was, at the close of last year, in course of consideration. The Prince of Wales has consented to open the playing field at Tunbridge Wells in July.

Interest in Gardening at Halifax.—The Mayor of Halifax, Alderman A. L. Whittaker, has, we understand, decided to convene a meeting of residents, to consider the formation of a branch of the National Gardens Guild, which has as its aim the encouragement of flower culture in the thickly-populated, industrial areas of Great Britain. Interest in gardening in Halifax has, during the last few years, been fostered by the Halifax Rotary Club, which has given prizes annually for the best-kept gardens on the Corporation's housing estates, but it is now realised that more good may be done in this direction if the various amateur gardening interests throughout the districts are amalgamated into a distinct body, and affiliated to the National Gardens Guild.

A South German Horticultural College.—The Bavarian State Horticultural College at Weihenstephan, formerly a two-term school of fruit cultivation and gardening, has been raised since 1924 to the status of a Higher Institution, in view of the ever-increasing importance of horticulture, and especially of cut-flower production, in south Germany. Weihenstephan, according to a writer on the subject in *Die Gartenwelt*, has a very beautiful position, high up, overlooking the Isar, with a fine view. The building is a large and roomy one, yet scarcely large enough for all its various activities. The college is approached through a large flower garden which serves as a demonstration plot for bedding plants as well as having a decorative purpose; a hardy plant garden and a rock garden a little higher up play a similar double rôle. A large building behind the hardy plant garden houses the fruit and vegetable stores and the wine cellars, and behind this again the ground rises steeply in terraces, which are utilised for raising young plants and other purposes, and also accommodate the bee-hives. A Water-Lily pool with shade-loving plants around it, is a pretty sight; and in other parts of the grounds are Rose gardens, summer-flowering plants, and Dahlias, besides fruit orchards, tree nurseries and hothouses. Altogether the area under cultivation extends to about thirty hectares. One of the most important branches of cultivation is that of early vegetables under glass, the climate and soil conditions practically precluding the production of these vegetables in the open, and only late ones being so grown. For the cultivation of early vegetables there are two large houses, each 25m. long, besides other houses which have a total area under glass of nearly 1,100 square metres. In the previous year a new Carnation house, 17m. by 35m., was built, while in the near future there is to be a propagating house and an Orchid house. Besides the opportunities provided at the College itself, the students have the privilege of visiting various interesting places within easy reach, including the Nymphenburg Botanic Garden, the fine Münchener cemetery, and the Pinakotheken and Glyptothek, also in München.

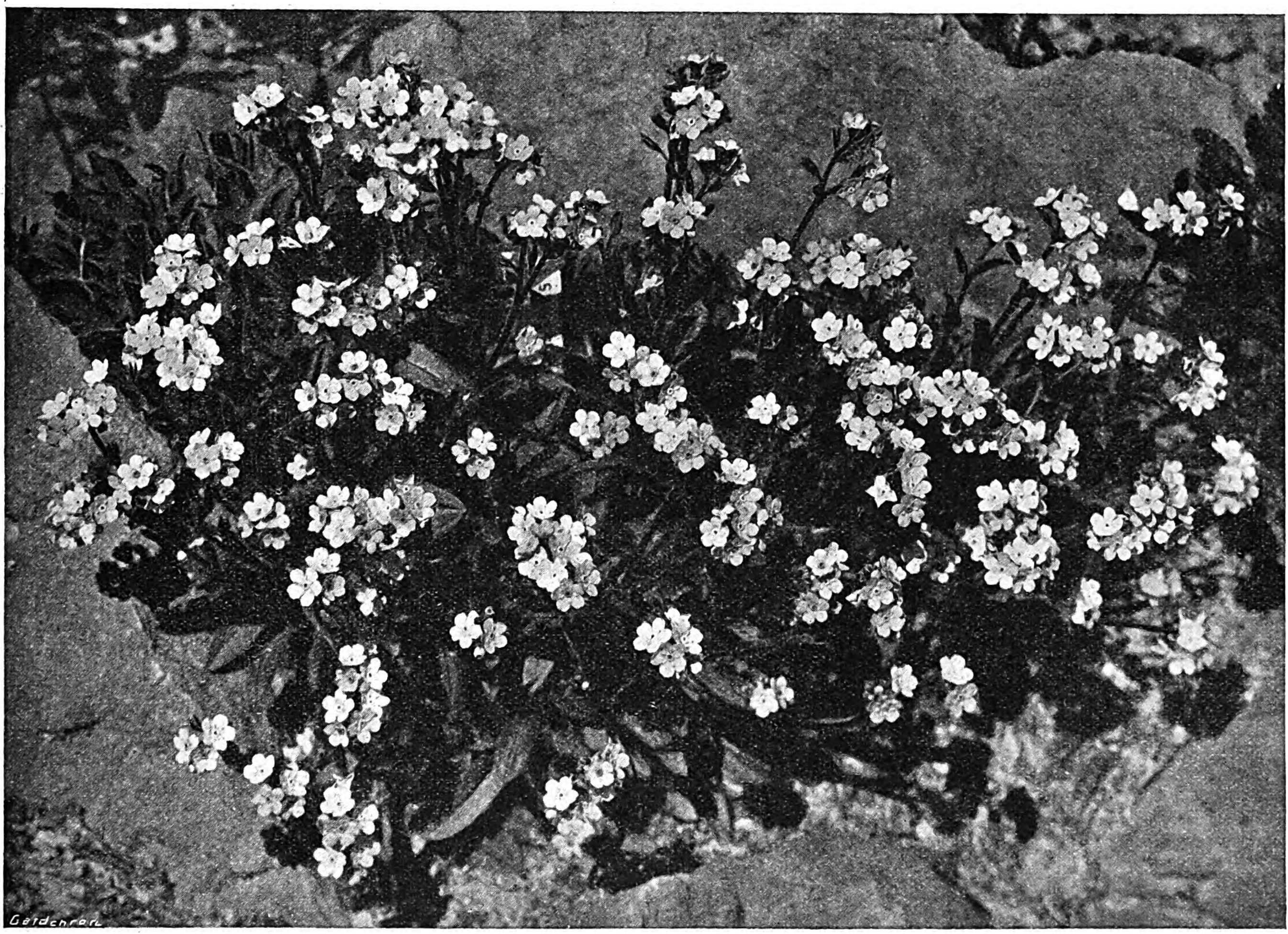


FIG. 108.—MYOSOTIS ALPESTRIS.
(see p. 226.)

Appointments for the Ensuing Week. — SUNDAY, APRIL 1: Wakefield and North of England Tulip Society's meeting. MONDAY, APRIL 2: Romsey Gardeners' Association's meeting. TUESDAY, APRIL 3: Royal Caledonian Horticultural Society's meeting. WEDNESDAY, APRIL 4: Wimbledon Gardeners' Society's meeting; Nottingham and Notts. Chrysanthemum Society's meeting; Pangbourne Gardeners' Mutual Improvement Association's lecture.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Effects of the Winter in South Devon.*—All the older species of Indian Rhododendrons are uninjured, as are those from Sikkim, with the exception of one plant of Dalhousiae, which has the points of its leaves slightly hurt, the other is untouched; ciliatum, four inches high, is coming into bloom. Berberis Darwinii is safe, and also coming into bloom. A standard plant of Escallonia macrantha has its leaves slightly hurt. Veronica speciosa, salicifolia, Lindleyana and formosa are very much injured, and even the hardy V. decussata has not escaped unscathed. Only the leading shoot of a huge Acacia dealbata has been slightly hurt, and its masses of uninjured blossoms are struggling to expand. Acacia venusta against a wall is slightly touched, but not so much as the Myrtles, which are more hurt everywhere than I ever remember; and huge old plants, nearly thirty feet high, give a fuscous, rather than a verdant, look to the house of a friend, against which they grow. Grevilleas sulphurea and rosmarinifolia are safe, as are some Corraeas. A large plant of Cytisus canariensis is dead, as is Cyclopia genistoides, a Prostanthera, and Aster argophyllus. I much fear some of the new Californian Ceanothuses are killed; and while Pinus Russelliana has escaped uninjured, a Chinese Arbor-vitae has been killed near it. The Himalayan Bamboo has suffered much, so has Benthamia fragifera. Hardy Fuchsias are everywhere killed to the ground, and F. serratifolia against a wall is nearly dead, as is Habrothamnus fasciculatus. The three species of Cantua against a south wall, I fear, are quite dead. Mitraria coccinea is much hurt. Plants of Agave americana are untouched, except one large plant, which has been sadly injured by the snow. Two trees of Eucalyptus have escaped with slight injury of their foliage, and my trees of the Citrus tribe, protected by frames of reed or wood, are wholly unharmed, and are, many of them, laden with ripe and ripening fruit. Against a wall and sheltered at night, Gardenia Fortunei, Luculia gratissima and Linum trigynum are safe. A large plant of Dracaena indivisa is safe and Phormium tenax is untouched, as are the Edwardsias and Tasmania aromatica. Plants of Camellia japonica are uninjured, and flowers of a rose-coloured variety are being gathered in good condition. *A Devonian. Gard. Chron., March* 26, 1853.

Publications Received.—*Handbook of Fertilizers* by A. F. Gustafson; Orange Judd Publishing Co., New York, or Kegan Paul, Trench, Trübner and Co., London; price $1·25.—*William Bateson, F.R.S., Naturalist,* by Beatrice Bateson, Cambridge University Press, Fetter Lane, E.C.4; price 21/- net.—*The Beekeeping Annual,* 1928, edited by H. Mace, Harlow, Essex, from whom copies may be obtained, price 1s., plus postage.—*The Gardeners' Year Book,* 1928, edited by D. H. Moutray Read; Philip Allan and Co., Ltd., 5, Quality Court, Chancery Lane, W.C.2.; price 5s. net.—*Lilies and their Culture in North America,* by W. N. Craig; Florists' Publishing Co., 508, S. Dearborn Street, Chicago, Illinois; price $3·00 post free.

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven Moore, Manchester.

Cattleyas and Laelio-Cattleyas.—The numerous species and hybrids in this section, also the hybrids derived from Brassavola Digbyana, which require similar cultural treatment, form an important group of beautifully flowered and popular Orchids. They are largely grown for decorative and cut-flower purposes. If a house is set apart for the cultivation of these plants their requirements are more easily provided; given an intermediate temperature, a moist and buoyant atmosphere, careful ventilation and only light shade from strong sunshine, success with them is practically assured. Avoid excessive watering at the roots; the amount of light and air received by the plants, and the atmospheric moisture in the house, should govern the supply of water required. The aim should be to produce well-ripened growths in their proper season, as these produce the finest flowers and are more easily kept dormant during the resting period. Sudden changes of temperature are harmful. The autumn-flowering varieties will now be showing signs of activity, and any necessary repotting may be done. The spring-flowering varieties may be attended to as they pass out of flower, and repotting should be done thoroughly with a view to leaving large specimen plants undisturbed for two or more years, removing all the sour material, old roots and useless bulbs, three or four pseudo-bulbs behind each lead being sufficient to retain. Use well-drained pots and a rough compost of three-parts of coarse A.1. and Osmunda fibre, one part Sphagnum-moss, crushed crocks and charcoal. This compost should be pressed firmly amongst the roots; stake the bulbs of the larger varieties to avoid root disturbance. Very little water is needed at the roots for some time, if thesurroundings are kept moist and the surface of the compost is sprayed on favourable occasions; increase the supply as both root- and top-growth advances. Scale insects attack the plants and should be removed by careful sponging with a weak solution of an approved insecticide.

Deciduous Dendrobiums.—These free-flowering Orchids have been making a fine display this season, and many have passed out of flower. As new growths start any necessary repotting may be done to enable the new roots to enter the fresh compost at an early stage, using pots for the large, and pans for the small-growing varieties. Dendrobiums do not require a lot of material about their roots, therefore ample drainage is necessary, and firm potting is essential. Three-parts Osmunda fibre and one part Sphagnum-moss, cut moderately small, with sufficient crushed crocks to keep it open, is a suitable rooting medium. Grow the plants in a light position in a warm house, lightly shaded during the hottest part of the day; maintain a buoyant and humid atmosphere, and spray the plants frequently. Better flowering bulbs are obtained if a free circulation of air is allowed than if the plants are grown in a stuffy atmosphere; water sparingly until the roots and growths are well advanced.

THE KITCHEN GARDEN.

By Allan Falconer, Gardener to the Cheadle Royal Mental Hospital, Cheadle, Cheshire.

Brassicas.—Cauliflowers, Brussel Sprouts and Cabbage plants which were potted, or boxed, from the early sowings, will require hardening off now, in preparation for planting them so soon as conditions will permit. Continue to prick out into frames seedlings from the later sowings, as they become ready. Place a good layer of well-rotted manure, on a firm base, in the frame, and cover it with good loam to a depth of four inches; prick out the seedlings four or five inches apart, and if the soil is moist, watering is best deferred until the plants commence to grow, shading them for a few days during bright sunshine. Seeds of the various kinds may now be sown on a warm border to produce Brassicas for planting out in June; they will provide a good succession to those raised under glass. A method adopted in these gardens, where large quantities of the Brassica family are required, is to sow the seeds in small patches at the required distance apart, thinning the seedlings so soon as large enough, and eventually leaving one strong plant from each cluster. In the case of Brussels Sprouts, I find this an excellent method, and from seeds sown now in rows three feet apart, with two feet six inches between the plants, splendid specimens are produced with little trouble, and they will produce sprouts until the end of March of the following year. When the plants commence to grow freely they are earthed up with the plough, and some artificial manure, if required, is given later to any plants which may be lagging behind the rest, and again just as the sprouts begin to form, even so late as October. Most of the Brassica family may be treated in this way with advantage. Cauliflowers sown where they are to grow will produce finer heads than if transplanted. The maincrop does not require sowing under this method until towards the end of April, and by sowing several varieties, good heads may be cut until October. Savoys for winter use may be sown at the same time in this manner, and will produce large, firm heads.

Cucumbers.—Continue to sow seeds to produce successional crops; the early-sown plants will now require attention by stopping, tying and feeding as the fruits swell. Keep the temperature fairly high and maintain a humid atmosphere by syringing and damping.

Tomatos.—The early Tomato plants will now be ready for either planting, potting or boxing, and as a preventive against disease, these should be sprayed with Bordeaux mixture before the first trusses appear and again after they have set. Avoid using very rich soils for Tomatos, as it causes sappy growth, which is detrimental to the setting of the fruits; it is preferable to use plenty of liquid and artificial manures at the time when the plants are swelling their fruits.

PLANTS UNDER GLASS.

By J. Coutts, Assistant Curator, Royal Gardens, Kew.

Vitis discolor (syn. Cissus discolor).—This beautiful stove climber may be grown well in large pots, but it is seen at its best when planted out in a bed of light rich soil. It enjoys a temperature of 65° to 70°, and the long, slender shoots, clothed with beautifully coloured leaves and hanging in festoons from the roof of the house, form a beautiful picture. Vitis discolor is propagated by means of cuttings, which root readily during the spring if placed in a case with bottom-heat; young lateral shoots root readily, but young shoots with a piece of the old stem attached at the base, root even more freely.

Euphorbia fulgens (syn. E. jacquiniaeflora).—This beautiful winter-flowering species may be increased by means of cuttings at this time, selecting slender side-shoots three to four inches in length for this purpose; they should be inserted singly in thumb pots and plunged in a close case with plenty of bottom-heat. The cuttings should never be allowed to flag as they are by no means easy to root. Euphorbia fulgens, when grown in pots, requires very careful management as regards watering; sudden changes of temperature should also be avoided, as it is very apt to lose its leaves. It does well when planted in a well-drained border, where the slender, Willow-like shoots may be trained up under the roof-glass; under these conditions it may be pruned hard back during the spring. Throughout the growing season an average temperature of 60°, and a moist atmosphere, are necessary; when in flower it will withstand somewhat cooler and drier conditions. Plants propagated at this season may be stopped once towards the end of May or early in June, they will then produce a supply of flowers for cutting in the winter.

Euphorbia splendens.—Yet another old inhabitant of our plant stoves is this Euphorbia that has small, bright red bracts, the flowers being produced more or less all the year round; its stems are thickly furnished with stout thorns. This species enjoys drier atmospheric conditions than that maintained in an ordinary stove; it is, in fact, happy when associated with a collection of warm-house Succulent plants. It is easily propagated by means of cuttings.

Celosias.—Seeds of these attractive plants may be sown in an intermediate house. C. cristata, the "Cockscomb," is not so popular as it used to be, for its stiff habit is not well suited for decorative work; the variety pyramidalis, with its more graceful habit, is, however, still favoured for conservatory adornment, while the variety Childsii, of free-growing and branching habit, is very useful also. Celosias thrive in a fairly light and rich compost, and to be successfully grown they should be kept growing right from the seedling stage without a check. As the season advances and the plants increase in size, they may be gradually accustomed to ordinary greenhouse conditions. Celosias are very subject to red spider and Begonia mite attacks, and preventive measures should be taken to protect the plants from them. Successional sowings may be made according to requirements; plants from a late sowing will provide an autumn display, while apart from good cultivation, success depends very largely on obtaining a good strain of seeds. Celosia argentea is another attractive species that is still in cultivation.

FRUITS UNDER GLASS.

By T. Pateman, Gardener to Sir Charles Nall-Cain, Brocket Hall, Hertfordshire.

Grape Thinning.—By now the thinning of Grapes will be fairly general, and this operation requires great care with regards to the handling of the bunches. When thinning Grapes, the berries should never be touched or rubbed, for if the bloom is removed at this early stage it never develops in intensity again. To prevent this taking place, one should use a forked stick to hold the bunches firmly when clipping out the berries. It is hardly possible to state how many bunches the Vines should be allowed to carry; much will depend on the strength of the individual plants, but over-cropping should be avoided. Judicious thinning will ensure a finer quality of berries, and it will also have a marked effect on the health of the vines. The berries of free-setting varieties may be thinned at the earliest possible date, while Muscats and other shy-setting varieties should be allowed a little more time, so that the grower may note which berries take the lead; these should be retained so far as possible, for the smaller berries will in all probability be stoneless. Perhaps the most suitable time for thinning Grapes is in the early morning when the house is comparatively dry and the berries free from moisture. At the first operation, remove all inside and stoneless berries; after an interval of ten days or more the remainder may be thinned until there is no danger of the berries pressing against each other. In any case, this operation should be completed before stoning takes place, otherwise it is a useless tax on the vine's energies.

Melons.—If all has gone well with the early batch of Melons, they will in all probability have set their fruits. It is not wise to allow the plants to carry too heavy a crop, two fruits on a plant, in my estimation, is ample, especially where they are grown on the cordon system. If the plants are being grown close together, the grower will find space very limited, therefore close pinching of the laterals at the first joint beyond the fruit and all succeeding growths from them, may be accomplished. At this stage a slight top-dressing of rich soil will be found very beneficial to encourage the production of new roots near the surface; these will assist the plants in keeping healthy foliage, which is essential if fine-flavoured fruits are to be assured.

HARDY FRUIT GARDEN.

By T. E. Tomalin, Gardener to the Earl of Bessborough, Stansted Park, Emsworth, Sussex.

Sweet Cherries.—Young, freshly-planted wall trees should be watched closely for black aphis, at the first sign of which a thorough spraying with a nicotine wash should be given. As the young growths develop, those that are required to extend the branches and furnish the wall-space should be secured to the wires, all other shoots being stopped at the fifth leaf to form fruiting spurs. Bush trees in the open may be treated similarly by leaving the shoots at the extremity of the branches, and any others required to build up a shapely tree, unchecked, and by stopping all others as advised. Birds are extremely partial to sweet Cherries, and this is another reason for preferring wall trees to standards, except where large areas of these fruits are grown, the former being so much easier to protect when the fruit is ripening. At that time the trees must be watched closely and netted immediately the fruits show the first change of colour, or it may be too late to save the crop. Old trees, which bear heavy crops each season, soon exhaust the soil in which they are growing, and growth becomes meagre, and the fruits undersized. When this occurs the surface soil should be removed so far as is possible without damage to the roots, and replaced with fresh loam, to which plenty of mortar-rubble, wood-ash, and a sprinkling of bone-meal have been added. This should be spread evenly and made quite firm, after which a mulch of strawy litter will prevent the soil from drying out too quickly. This treatment will impart fresh vigour to the trees, but it is only necessary at intervals of from three to four years, between which the soil treatment may alternate between a dressing of manure one year, and of lime the next. Early Rivers, Belle d'Orleans and Guigne d'Annonay are three good early varieties, whilst for succession, Governor Wood, Black Tartarian, Bigarreau Schrecken, May Duke and Bigarreau Napoleon are desirable. Some of these varieties are self sterile, therefore the flowers should be cross-pollenated to ensure fertilisation and a good set of fruits.

Blackberries.—The Blackberry has yet to be raised which will excel the native varieties for flavour; nevertheless, for their productiveness and size of berry, the well-tried cultivated varieties should not be absent from any representative collection of fruits. They require similar conditions and treatment as the Loganberry, and may be trained in the same manner. The Himalayaberry, Laxtonberry and Wilson Junior are all good, whilst Rubus laciniatus has the added attraction of finely-cut foliage of considerable beauty.

THE FLOWER GARDEN.

By J. G. Weston, Gardener to the Duke of Devonshire, Chatsworth, Bakewell, Derbyshire.

Bedding Calceolarias.—Those that were propagated in frames or boxes should be re-boxed, using a compost of rough loam and leaf-soil, into which they will root quickly, and which will suffice them until the beds are cleared of the spring flowers. If the weather is cold when they are disturbed, keep the frame closed for a few days until root action has commenced, after which full ventilation may be given during all favourable weather to keep the plants as sturdy as possible. Varieties such as C. amplexicaulis, that are often used as dot plants, should be potted into larger pots and staked as required, to be of good size when bedding-out time arrives.

Hybrid Perpetual Roses.—Although the newer and improved Hybrid Teas have ousted these from the first place in popularity, many Rose growers still retain a number of the best of the Hybrid Perpetuals, their fine, shapely and solid blooms, in rich and decided colours, ensuring for them their place in the Rose garden, despite the fact that the Hybrid Teas and fashionable single Roses are grown in greatly increased numbers. An old-fashioned way of growing H.P. Roses, which make very strong growths, is to retain practically the whole length of the shoots, pegging them down to within twelve or eighteen inches of the ground. If well-ripened, these strong growths will flower nearly their whole length, and will greatly increase the display of Roses in the bed. For general garden decoration, and in selected situations, some varieties should be allowed to grow naturally. These will eventually make large bushy specimens, and it is astonishing what a magnificent display will be produced in the summer on these little-pruned bushes. When the pruning is finished, thoroughly clean the beds and borders; if the beds are surrounded by turf the edges should be neatly cut with an edging knife. Lightly fork the beds, digging in any manure that has been placed on them earlier in the season; if no animal manure has been available, apply a light dressing of good bone-meal or reliable Rose manure. See that all labels are in their proper places; the small metal Rose labels are practically imperishable and are not conspicuous, and they may be found when wanted. Roses grown for garden decoration only, as distinct from exhibition, may have Violas or other low-growing plants grown thinly amongst them, but care should be taken that in a wet season the Violas do not outgrow their position and encroach on the Rose bushes.

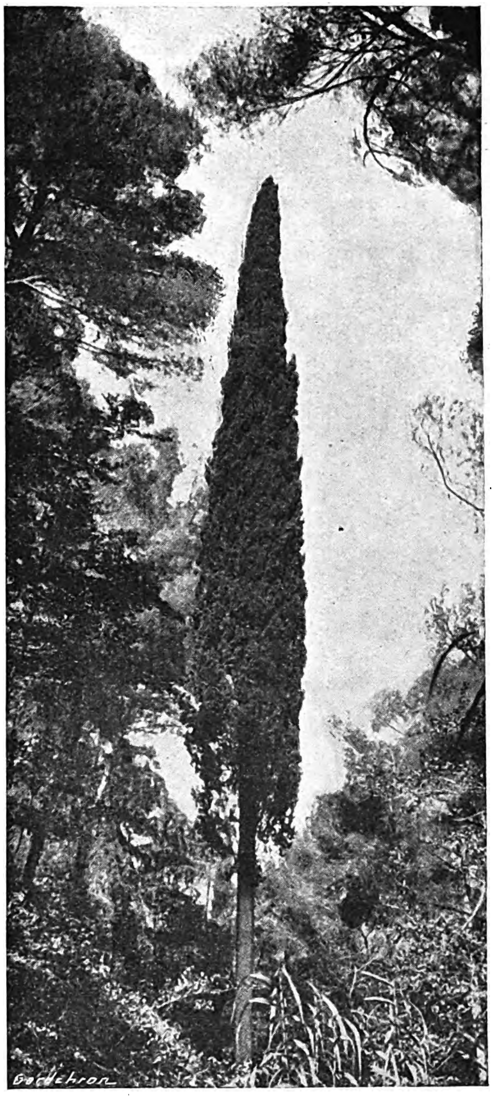


FIG. 109.—CUPRESSUS SEMPERVIRENS VAR. PYRAMIDALIS, AT LA MORTOLA.

(see p. 227).

Dwarf Polyantha Roses.—These are being grown in increasing numbers every year, and they are splendid for planting in permanent beds or borders; no class of Rose blooms more profusely. They should be treated liberally, as the more quickly new growth is made the greater will be the production of blooms, which will continue until late in the autumn. Cut out all weak growths and prune the remainder back hard. These dwarf Roses are also very popular for edging large Rose beds. A few really good varieties are Edith Cavell, Coral Cluster, La Reine Elizabeth, Perle d'Or, Orleans Rose, Leonie Lamesch, Mrs. H. J. Cutbush, Eblouissant, Yvonne Rabier, Orange King, Golden Salmon and Jeanne d'Arc.

FOR NORTHERN GARDENERS.

By A. T. Harrison, Gardener at Jordanhill Training Centre, Glasgow.

Lawns and Parks.—Where extensive lawns have to be kept closely mown, a start may have been made to put them into order by rolling. Worm-casts, which are sometimes troublesome, should be dispersed by brushing them when in a dry state; these, when evenly distributed, are readily washed in by rain, and a certain amount of nourishment is thus afforded to the roots of the finer grasses. On large areas, worm-casts may be scattered expeditiously by means of horse-drawn chain-harrows, followed by a heavy roller, or the motor-mower, if sufficiently weighted, may be used effectively for this purpose. Weedy lawns may be greatly improved if repeated dressings of lawn sand are applied, but where the expense involved is a consideration, one or two light dressings of sulphate of ammonia, at the rate of one ounce per square yard, will be found most effective. In the milder south-western district, moss is unusually troublesome on lawns, and where time permits, this should be removed so far as possible by scratching it out with a moss-extractor; when partly cleared, a dressing of powdered, freshly-slaked lime may be applied. Kainit is also recommended as a dressing where moss is very bad, as this cheap manure, while destroying the moss, has a very beneficial effect on the grass. The edges of paths should now be put into order, and any defective places made good; if grass edges are attended to about this time each year they are so much easier to keep in order during the growing season.

Vines.—If the buds are swelling freely, the rods may now be tied into position, care being taken to avoid rubbing off the newly-awakened buds. Young vines are usually apt to break unevenly, as the rising sap has a tendency to reach the topmost buds first and these are developed sometimes at the expense of the lateral ones; for this reason the bending down of young rods has much to recommend it. So soon as the foliage has developed, greater care is necessary in ventilating the houses; they should, on sunny mornings, have the top ventilators opened slightly before the sun has raised the temperature sufficiently to do any damage. The ventilators may, however, be closed soon after mid-day, when the houses are being damped down, and the temperature of the house, when thoroughly charged with moisture, may be allowed to rise to 90° without doing the tender foliage any harm, thus maintaining a genial growing atmosphere during the remainder of the day.

Pricking - off Seedlings, etc.—Many seedlings are now ready to be pricked out singly, and where large numbers of certain kinds are required, a rough calculation may be made to ensure a margin, whether of bedding plants or vegetables. This work entails a lot of time, and if preparations, such as filling the boxes with soil, can be made in advance, and the boxes stacked in a warm place, it will be found a decided help when the work of pricking out is in progress. Dahlia cuttings are now being produced more freely and sufficient of the various kinds should be inserted in the propagating house. Lobelia cardinalis, which has been wintered indoors, may now be split up into conveniently-sized pieces and planted in good soil in a cold frame, where, if kept fairly close and moist, they will soon form good clumps for planting out later. The other occupants of cold frames, such as Violas, Nepetas, and Pentstemons, should now be given full air on every suitable occasion during the day-time so that they may be ready for planting outside at an early date.

BULB GARDEN.

WATSONIA MERIANA VAR. O'BRIENII.

Great interest was aroused in the horticultural trade a few years ago by the introduction of a white Watsonia. It is believed to have been first found by Mr. W. H. Arderne, of Cape Town, whose name it generally bears.

It grows to a height of three or four feet, and the sturdy spikes bear up to a dozen, or even more, waxy-white flowers, each nearly three inches across. The purity of its colour and its valuable properties as a cut flower render it invaluable in the sunny herbaceous border, or near a south wall.

The whole genus Watsonia bears a very close resemblance to Gladiolus, both having long, sword-shaped leaves; the chief difference appears in the flowers, which in the Watsonia are long-tubed and more regular than in the Gladiolus, which usually has three of the six perianth segments of different size and shape.

A very important difference, which will probably only appeal to the botanist, is that the style branches of the Watsonia are simple, while those of the Gladiolus are bifid.

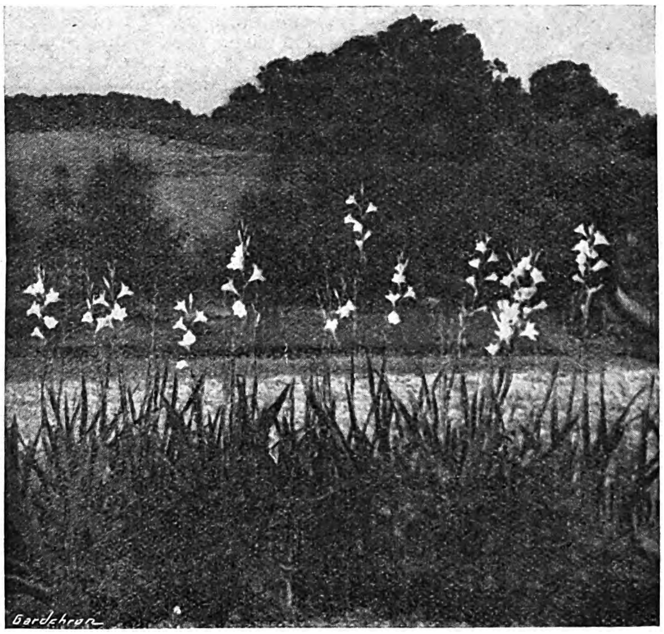


FIG. 110.—WATSONIA MERIANA O'BRIENII.

Most of the Watsonias are not considered hardy in this country, which is not surprising since all of the thirty or more species are South African, yet W. Meriana O'Brienii, often listed as W. Ardernei, shows every prospect of withstanding our winter in the open, especially if well-ripened during the summer and autumn—this past season, alas, so impossible. Those shown in the accompanying illustration (Fig. 110) were grown in pots in a cold frame during the winter, and planted out in their present position in early spring. The winter protection was very slight, the frames being open a great deal of the time, a temperature of 15° F. being registered in them on several occasions. The bulbs, however, showed no ill effects whatever and flowered magnificently.

This winter they have been left out to take their chance in the open, despite the soaking they had during a dreadful season, and from their sturdy, happy appearance, I feel confident that we shall have them with us again this year, probably with increased vigour and beauty.

Although not a new plant, Watsonia Meriana var. O'Brienii is still uncommon in our gardens, and I hope that these few notes will be one step towards securing for it the popularity it so well deserves. *Will Ingwersen, The Birch, Sharpthorne, Sussex.*

ALPINE GARDEN.

MYOSOTIS ALPESTRIS.

Among the Forget-me-nots that are popular subjects for the rock garden, Myosotis alpestris deservedly holds a high position, although other species are no less valuable. A native of the mountains of Central Europe, M. alpestris has come under the improving care of raisers, consequently the true type is not often grown. It is, nevertheless, a good plant under any reasonable conditions, but has a tendency to grow a trifle tall for certain positions, although it is invariably admired for its clear blue flowers. The variety—or hybrid—named Ruth Fischer is dwarfer and more compact, and bears its large, sky-blue flowers freely on shortly-branching stems. So long as it is not placed in a very dry position, M. alpestris does not ask for special treatment, hence it is entirely suitable for those who require beauty rather than rarity or quaintness in the rock garden.

Certain authorities regard M. alpestris as identical with, or a form of, M. pyrenaica, while others discover differences between them. The late Mr. Reginald Farrer stated that "only by the utmost niceties, if at all, can M. pyrenaica and M. olympica be separated from M. alpestris." The plant illustrated (Fig. 108) may be regarded as a good type of M. alpestris, as it is known in gardens.

IONOPSIDIUM ACAULE.

The delicate, pale mauve-coloured flowers of this dwarf Cruciferous plant are decidedly pretty, and they are produced practically throughout the growing season of the year, thus making Ionopsidium acaule a very desirable subject for growing in situations for which it is adapted.

It is a hardy annual, rarely exceeding two inches in height, and is suitable for growing in slightly moist but sunny situations in the rock garden, while it is an ideal subject for growing between the stones of crazy paving.

Seeds of it may be sown in September, or at any time during the spring or summer, according to when the plants are required to flower; when once Ionopsidium acaule is established it will seed itself freely. *T. H. Everett.*

CAMPANULA PLANIFLORA.

Quite a wealth of variety exists among the Campanulas, or Bellflowers, and the specialist in these flowers has a wide choice in forming his collection; of the dwarf species that are suited to the rock garden or the front of the border there is an almost embarrassing choice of charming subjects.

One of these, which has been in cultivation for a long time, and about whose first entrance to our gardens there is said to be some mystery attached, is that which is now called C. planiflora, but which for many years was known as C. nitida. Some high authorities tell us that it came from North America in 1817, but others assert that it is a garden hybrid or form of C. persicifolia; but it appears, without doubt, that it is a true species, and that it does come from North America.

It is a distinct little plant with thick, glossy leaves and short spikes, about six inches high, of closely set, flat, saucer-like flowers. At one time four or five varieties of this species were quite plentiful, with the exception of a pale blue one. The typical plant has single blue flowers, and there is also a double blue form. These are called respectively, C. planiflora pl. fl. caerulea and C. p. caerulea plena.

There is also a charming little single white form, C. p. alba, and it, also, has its double form, called alba plena; the pale blue variety I have only seen once, and it had single flowers. These Campanulas may be grown in almost any soil and seem to prefer a little shade, while they may all be increased by division.

ERODIUM CARVIFOLIUM.

With a few others of the genus, Erodium carvifolium has been placed in a lower category of merit than the majority of the alpine species, but that may be due to its having been grown in too rich soil, where the flowers have a tendency to open badly. In very poor composts, with plenty of sand, grit and chips, and planted very firmly, or in a wall garden, it seems to open better, but it must always have full sun. This Heron's Bill is about nine inches high, and, like the others of the race, has very finely divided foliage, Fern-like in its appearance; and on slender branches. The flowers begin to open in early summer and are borne in succession for months. They are of a pleasing shade of pink. E. carvifolium may be increased by division, cuttings and seeds. It is quite hardy in the positions recommended above.

SAXIFRAGA BRYOIDES.

Saxifraga bryoides is generally considered to be a high mountain form of S. aspera, but it is distinct in several ways, and is a plant that is seldom encountered, even in gardens where a speciality is made of the genus to which it belongs.

It forms close, trailing masses of short branches that are heavily clothed with small leaves, which are bristly on the edges and moss-like in appearance. The flowers are usually solitary, on a short stem, and are of a clear yellow, freckled with red and gold.

I have not found it to be a free-bloomer, although I grew it for many years on a well-drained piece of rockwork in full sun. This situation should have suited it, for S. bryoides affects drier places than S. aspera.

One cannot hazard the statement that S. bryoides is choice, especially when there are so many lovely plants of the genus available, but it is an interesting subject, and has its value for the drier parts of the rock garden where a moss-like plant, with greyish foliage, is desired. It is easily increased by division or cuttings.

CAMPANULA PULLOIDES.

That there is a "fashion" in alpine flowers as well as in dress is quite apparent to those who have been engaged in their cultivation for many years, and although still favourites, it can hardly be gainsaid that the Campanulas are less popular than they were a few years ago. However, the real lover of flowers cares little for fashion and has never lessened his love for the Bellflowers; he continues to cherish the old ones and to look for new treasures, such as C. Lauri, which appears to have come to stay.

Campanula pulloides is now an old favourite, although it seems but a few years since it came to the front. It is reputed to be a hybrid of

C. pulla and C. turbinata, but is a much better grower than the former in many gardens, although partaking of much of its character. It has two forms, the Kew one being considered the finer, but either of the two will give satisfaction and much pleasure under ordinary rock garden conditions.

C. pulloides may be described as a glorified edition of C. pulla, of greater height and with larger bells, which are more open at the mouth, and of similar colouring. They are borne in great profusion, and a good plant in the rock garden is delightful with its many flowers of richest violet.

This Campanula is not difficult to grow in open soil on the level, or in a crevice of the rock garden; I always think most of these dwarf Bellflowers give better results when grown in partial shade, for if growing in full sun the blooms seem to fade more quickly than when in partial shade. C. pulloides is increased by division or cuttings. *S. Arnott.*

TREES AND SHRUBS.

DAPHNE CAUCASICA.

During May and June this attractive deciduous Daphne (see Fig. 111) is often heavily laden with glossy, white, fragrant flowers, that are produced at the ends of growths of the current year's production; the flower clusters usually consist of from four to twelve blooms.

It is a native of the Caucasus, and has often been introduced into this country, but its cultivation has never become general, and it remains a comparatively rare subject, although why it should remain so is difficult to understand, for under congenial conditions it flourishes and becomes a really attractive feature.

Daphne caucasica forms a rather loose bush, up to about four feet in height, the numerous short, leafy growths, on which the flowers are borne, being downy, while the barren ones are almost, if not completely, devoid of down. The leaves, that are produced along the entire length of the shoots, are oblanceolate and from one to two inches in length, tapering at the base, smooth, and pale green in colour.

For those who indulge in the cultivation of uncommon flowering shrubs I recommend the inclusion of this Daphne in their collections, and suggest for it a loamy soil, in which lime is present, and a sheltered but sunny position. *A. F.*

CUPRESSUS SEMPERVIRENS VAR. PYRAMIDALIS.

In the issue of *The Gardeners' Chronicle* of February 4, p. 73, mention was made of a very tall Cupressus sempervirens growing at La Mortola, but I am sure that the majority of visitors to those gardens have failed to find it, because it is situated in the woody valley that runs down by the side of the garden and only the top is visible as one descends the main path.

It is a very fine specimen, and those visitors who are curious enough to enquire after its whereabouts are well rewarded when they see it. When measured a few years ago, it was a little over one hundred feet tall.

Growing as it does in a sheltered and wooded valley—a valley that is almost a gully, as it is very narrow—it has been protected always from the very strong winds that sweep the coast at different times of the year, and it stands out now a tall, tapering giant, isolated from its fellows and thereby enhanced in beauty, as the illustration (Fig. 109, p. 225) shows.

The greyish-white, slightly grooved trunk rises clear for about thirty feet, and carries over seventy feet of dense, dark-green, almost blackish branches that are appressed to the trunk, making a fine columnar outline.

Specimens of this Cypress are a prominent feature at La Mortola, and many fine examples may be found in the garden, but none so tall as this one. The late Sir Thomas Hanbury, who knew and appreciated their beauty, would give to the local people who wished for them, small specimens to be planted in their gardens, and to-day the results of his far-sighted generosity may be seen all over the district, as these trees make more picturesque a landscape that is already naturally beautiful. *S. F. Ovenden.*

RAPHIOLEPIS JAPONICA VAR. DELACOURI.

The origin of this evergreen shrub is somewhat obscure. Some authorities believe it to be a variety of Raphiolepis japonica; others that it is a hybrid between that species and Raphiolepis indica. However, it is usually seen under the above name, and regardless of its origin is a plant well worth possessing. As in Raphiolepis japonica, the leaves are strong and leathery, ovate or oval, having the lower part entire and shallow-toothed towards the apex, one-and a-half to three inches long and about one-and-a-half inch wide; the young leaves are an attractive coppery colour and are covered, for a short time, with a grey down. The attractive pink flowers appear about June, and are borne in dense, neat terminal panicles or racemes about three inches high, each flower being about half-an-inch across. To succeed outdoors, this shrub requires a medium loam, with a little sand and leaf-mould added. It should be planted in a sheltered spot or given the protection of a warm wall. *Thos. Blythe, Botanic Garden, Cambridge.*

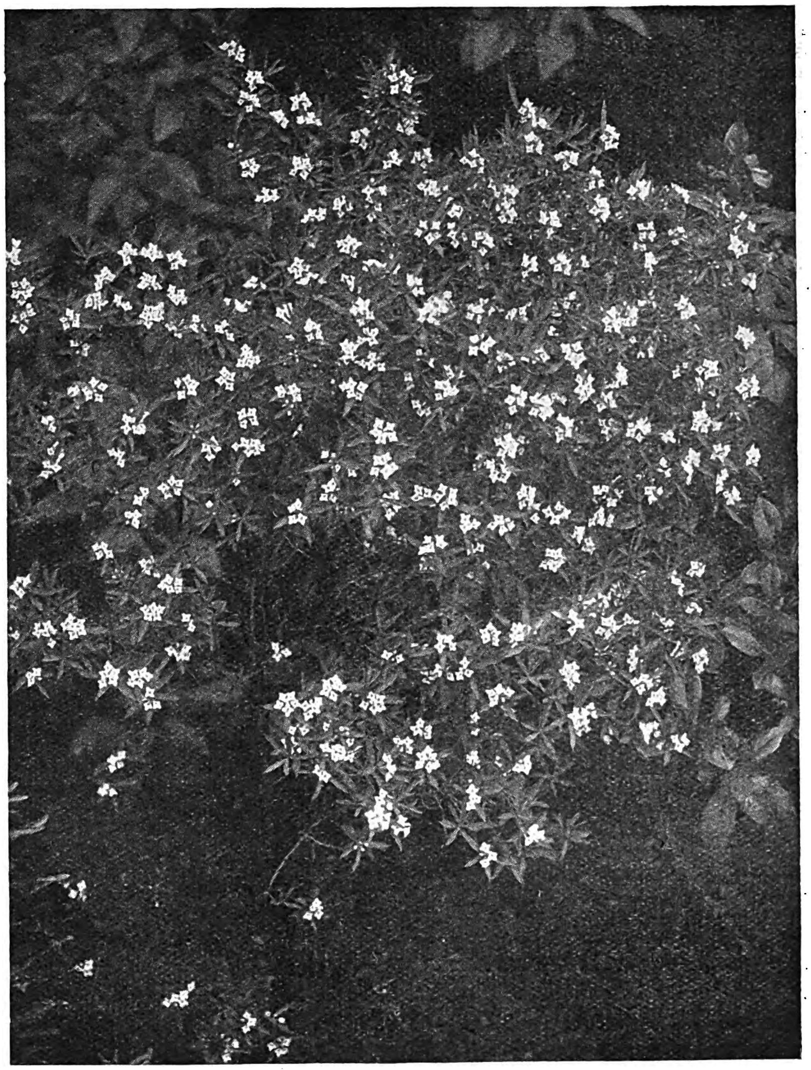


FIG. 111.—DAPHNE CAUCASICA.

NOTES FROM WISLEY.

Concrete evidence of the research programme mapped out by the Royal Horticultural Society for this year is already visible at Wisley in the form of building material, heaps of which have been deposited on the south side of the new flower-trial grounds. It will be used to construct brick pits, which will be filled with various soils with the object of determining the effect of different types of soil upon plant growth. Another experiment for which the necessary apparatus may be seen in course of construction, is one for ascertaining the effect of the length of daylight upon plant growth. For this purpose a wooden structure is being built with compartments in which the amount of light received by the plants under experiment is controlled, and in one section is supplemented by means of electricity. This research work is under the special charge of Mr. M. A. H. Tincker, M.A., late of the Department of Agriculture at Aberystwyth University, who, it will be remembered, has been appointed Keeper of the Laboratory at Wisley.

Among the shrubs in flower in the gardens during the past fortnight, Forsythias have been conspicuous. One of the most valuable, on account of its remaining in bloom over so long a period, is F. spectabilis, with long, straight stems and large yellow flowers. Another yellow-flowered shrub remarkable for the persistance of its blooms is Cornus Mas, for although it commenced to flower at the beginning of February, it is only now that the flowers show signs of withering, and are being followed by foliage.

Many ornamental flowering trees are already in bloom. Some of the most beautiful are Prunus Cerasus Yoshino, which grows freely around Tokyo, and the weeping form of P. Cerasus subhirtella, of which there is such a splendid specimen at Wisley. In addition to Prunus Pissardii, another purple-leaved Plum, P. purpurea Woodii, is in bloom, and its pink blooms blend well with the rich purple foliage. A dwarf-growing ornamental Prunus is seen in P. incisa Mume Sakura, of which eight-year-old plants have as yet only reached a height of about four feet. The flowers are white, flushed with pink, and they are borne very freely. It would not be difficult to arrange a most interesting and attractive border composed entirely of ornamental trees of this kind. The use of low-growing shrubs, such as the foregoing, together with Japanese Quinces, would simplify the furnishing of the front of the border, and bloom in the autumn could be provided by the planting of Prunus subhirtella autumnalis which, although in blossom at the present time, flowers again later in the year.

Around the field-garden pond, the catkins of most of the Willows have passed their most attractive stage, but the fresh green foliage which is beginning to appear gives to many varieties as beautiful an appearance as they presented when in flower.

In the adjacent Heath garden, large drifts of Erica darleyensis and Erica carnea are in full bloom. A conspicuous variety of the latter is E. carnea Vivellii, with deep red flowers and purplish foliage.

The frosts have taken severe toll of the shrubs growing on the laboratory walls, the majority of which are of doubtful hardiness, but among those which have escaped are plants of Ceanothus dentatus and C. rigidus. These are now covered with flower buds and should make a very good display. Another is a variegated-leaved form of Azara microphylla which is now in bloom and which, with other plants of the type, scents the gardens with its strong Vanilla perfume. Among the plants on the walls, many of the Escallonias have been badly damaged, but Clematis Armandii has not been affected and is just coming into flower.

Several Rhododendron species are in bloom in the rock garden, such as the bluish R. idoneum, and R. lutescens. Although the latter is valuable for its uncommon, lemon-yellow flowers, these are never borne very freely at Wisley, and the plant always seems to present what one may term a half-hearted appearance.

The rock garden is full of spring flowers, such as Saxifrages, to be seen in great numbers and variety, and Primulas, including P. Juliae and P. denticulata. A pretty Sisyrinchium which is making an attractive display is S. grandiflorum. The flowers nearly match in colour those of an adjoining patch of Saxifraga oppositifolia, which in many parts of the rock garden and in the alpine house is blooming particularly well this year. Another pretty plant is Scilla bifolia carnea, a number of whose white blooms, slightly suffused with pink, may be observed sheltering under the lee of a fan-like branch of Cotoneaster horizontalis.

Following upon a good show of Iris reticulata, the borders around the laboratory are now filled with the bright blooms of Tulip species and other bulbs, such as Chionodoxa and Scilla. Among the latter is a particularly fine form of Scilla sibirica atrocoerulea which has extremely large flowers of deep blue, and is flowering quite as freely as it did last year.

The perennial Asters on trial at Wisley, which have lately been removed to the new flower-trial grounds, should do well in their new and drier quarters, as also should the Delphiniums on trial. They are now coming up very strongly, but it is possible they may not attain the same height as in their former moist positions. Amongst the few plants in bloom at the present time in the flower-trial grounds, mention may be made of some Tulip species which formed part of a collection belonging to the late Mr. W. R. Dykes. These include several beautiful forms of Tulipa Kaufmanniana, notably, a cream-coloured variety particularly strongly marked with pink on the reverse of the perianth. Another handsome species is the vivid orange-scarlet Tulipa praestans, while less obvious, but no less attractive, are T. turkestanica, with a creamy-white perianth backed with purplish-green, and the bright puce-coloured T. polychroma, which has a distinct yellow base. In addition to Tulips, there are many varieties of Scilla, such as S. cappadocica, some spikes of which bear so many as nine flowers, and the general effect of the blue Scillas, together with the brilliant colours of the Tulips, is an extremely fascinating combination.

In wilder parts of the garden, Crocuses are prominent, but considerable damage has been done by rabbits, which have nibbled off both flowers and foliage. An outstanding variety at Wisley has always been Queen of the Blues, but other sorts which are blooming well include the very dark violet Velvet, and Snowstorm, a handsome white variety with just a trace of purple at the base.

Visitors to the gardens may notice a peculiar wheel-barrow which is on trial; instead of a wheel, a caterpillar device is fitted, which enables the barrow to be used over soft soil or turf without damage. It is quite easy to propel and is apparently satisfactory in every way. *J. E. Grant White.*

HARDY FLOWER BORDER.

TIARELLA CORDIFOLIA.

The Foam Flower, Tiarella cordifolia, always remains a favourite in the garden, and it is highly valued near the base of rockwork or in the front of the border, while it is also very beautiful near the margin of a pond or stream. Its poetical and alliterative name of "Foam Flower" is aptly enough applied, although I always think that the white variety of Thalictrum aquilegifolium has a better right to the title. But the spires of fluffy-looking white flowers are so elegant that their being likened to the sea or river foam does not appear misapplied. They look particularly well owing to their being raised above the pretty, five-lobed leaves, which, coming pure green, afterwards assume delightful bronzy tones.

The flowers are white, but they have pink anthers in most plants. There is, however, a variety with white instead of pink anthers, which is sometimes offered as T. cordifolia alba. The flowers appear during June on delicate pinkish stems, which are about six inches high. The appearance of T. unifoliata some years ago, when it was first shown at Chelsea, attracted much notice, and it was thought that this species might displace T. cordifolia to some degree, but it has not had this effect, and the old Foam Flower remains as popular as ever. It is readily propagated by division in spring or after flowering. It comes from North America and is perfectly hardy in the British Isles.

PAPAVER PILOSUM.

The beauty of the varieties of Papaver orientale and the annual Poppies has cast into the shade that of some of the larger perennial species, such as Papaver pilosum, the subject of this note. This is unfortunate, for it is of distinct appearance, and when in bloom gives some character to the position it occupies. Its appearance, even when not in bloom, is attractive. Its branching stems, with their hairy, grey leaves, gives a feature to the place, and when their flat flowers open out to the sun they are quite in harmony with the foliage. They are of a pleasing shade of salmon, which by some writers has been likened to the colour of champagne.

The flowers, carried in clusters, are borne in succession throughout the summer months, but to lengthen the season of flowering the capsules should be removed after the flowers have cast their petals. In this early casting of the petals the weakness of Papaver pilosum lies, as the blooms are very fugacious and, in sunny weather, when there is much wind, these petals drop off early in the day. One may see a group of plants in full bloom in the morning, and by midday all the flowers may have disappeared. But the next day they are followed by a fresh crop, and so on, for a long time. This Poppy increases readily by seeds, and self-sown plants often appear, especially in light soil. The height of P. pilosum is about two feet, more or less. I consider that it likes a dry soil and a sunny position. *S. Arnott.*

FLOWER GARDEN.

SALVIA SPLENDENS AS A STANDARD.

Standard-trained specimens of this subject always attract attention in the flower garden, and they also improve the appearance of the beds, especially when the groundwork is of plants of similar character.

Although requiring a certain amount of care and attention during the training period, which occupies about sixteen months, they well repay the labour involved.

The method I employ is to sow the seeds in February, in a temperature of 60°, using a compost of loam, leaf-soil and sand. When the seedlings are large enough to handle, the number required are potted into three-inch pots. I prefer seedlings to cuttings as they are usually more robust in growth and grow to the required height quicker than do cuttings. When the three-inch pots are filled with roots the plants are repotted into slightly larger ones, using a rich compost of loam, leaf-soil and old Mushroom bed manure, with a small amount of sand, if the loam is heavy.

When established, they are grown under slightly cooler conditions; a temporary stake is inserted in each pot to which the plants are tied regularly, and all side-shoots are rubbed off. By giving the small shift when required, they are ready for pots nine inches in diameter by the end of June, in which size they remain until planted out the following June.

A good compost for the final potting is three parts loam and one part leaf-soil and old Mushroom bed manure, with a liberal sprinkling of bone-meal. Firm potting is essential, and the pots should not be over-filled.

When the required height is reached the plants should be stopped, and a good stout stake firmly inserted against each plant, to which it should be tied securely. After the stopping, side-shoots will develop quickly, and the topmost four or five may be selected and the remainder removed. When the selected growths have lengthened to about six inches they should be stopped; thus the foundation of the "head" is made. Side-shoots forming after this may be allowed to grow, stopping only those that tend to unbalance the shape of the head.

Throughout the summer these Salvias may be grown with pot Chrysanthemums, for they require similar treatment with regards to syringing, watering and feeding. By the end of September they should be moved under glass, where they may be allowed to flower, wintering them in a temperature of about 45°. In March, the shoots that have flowered may be trimmed back and any weak growths should be thinned out, keeping the head in shape. Some of the old soil may be replaced by a rich top-dressing of new soil. A house with a temperature of 50° is a suitable place in which to grow them. Early in May they may be moved to cooler quarters, preparatory to hardening them off, to be ready for planting in the open in early June. Unless the plants are required for another season, it is advisable to remove the pots when planting; watering should be strictly attended to until the plants have established themselves in the beds. Growth will probably be vigorous, and any shoots that are inclined to grow too long, to spoil the shape of the head, should be stopped. The standard Salvias will start to flower in August and will continue to do so until frost comes.

If the required number is raised each year there is no need to retain the old plants after they have done service in the beds, for young standards flower more freely and carry finer foliage; if the groundwork of the beds is also of Salvia splendens the same variety should be chosen as for the standards.

I find that Glory of Stuttgart is a good variety. *George Mackenzie, Cranmer Hall Gardens.*

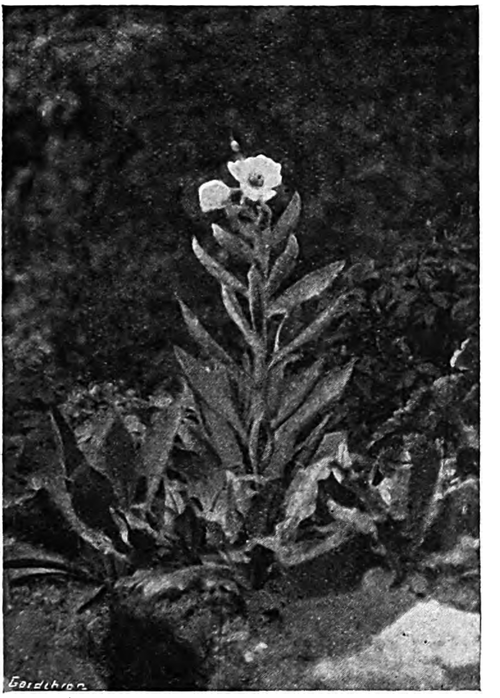


FIG. 112.—MECONOPSIS SUPERBA.
Photographed on June 4, 1927.

PLANTS NEW OR NOTEWORTHY.

MECONOPSIS SUPERBA, KING.

In April, 1925, I received six or seven small seedlings (all that were left in a seed-pot), labelled M. nepalensis. As they looked very different to M. nepalensis, even in the small state, a query was put after the name. They were planted out in a box. Three were transplanted on September 22, 1925, and two on May 13, 1926. On May 25, 1927, one of the plants commenced to flower, and the note in my diary is "Meconopsis superba ? coming into flower, lovely white flowers . . . . . . received as M. nepalensis ?" On May 31, 1927, "Meconopsis suberba ? opened another white flower, paper-white, deep yellow anthers, deep red stigma, leaves woolly, greyish, hairy, lanceolate, serrated edges."

On June 4, 1927, one of the plants was photographed. The illustration (Fig. 112) of the flowering plant shown was reproduced from this photograph. Another plant came into flower about the same time.

The only description I could find of M. superba was in Reginald Farrer's *Rock Garden*, and this rather unsettled me as the description of the leaf did not agree. He writes of it:—"A most stately species of two yards high (mine was under one yard), in the line of M. Wallichii, and clothed all over in a dense soft coat of grey down, as well as a vesture of soft, spreading hairs. It is in all respects like M. paniculata, but is taller and larger in every part, and has much larger flowers, too, which break away from the family traditions in being pure white instead of yellow, while the leaves would also serve to differentiate it from the rest, for they are only lobed into bays with definite teeth at the edge. It is in the high alpine meadows of Bhotan that it makes its superb spouting spire of snowy blossom."

Except with regard to the leaves, Farrer's description applies to my plants, which also follow the lines of M. Wallichii and M. paniculata in that they carry their rosettes through the winter. One plant I have left, which I had photographed on January 31, 1928, is passing through its third winter. I had another plant which unfortunately collapsed a few days ago, due to rot at the root. The rosette is very different from that of M. Wallichii and M. paniculata, as will be seen from Fig. 113. The leaves are not "lobed into bays," but they have very definite teeth at the edge. The texture of the leaves is much stouter than in M. Wallichii or M. paniculata, and they are "clothed all over in a dense, soft coat of (lovely greenish) grey down, as well as a vesture of soft, spreading hairs."

I submitted photographs, specimen leaves and capsules to friends who had considerable knowledge of the Meconopsis family, but although one said it was probably M. superba, he would not be certain without some better material to compare with my specimens.

In January of this year, I took photographs, with a leaf and a seed capsule of the Meconopsis, to London. On showing them to a friend at the Royal Horticultural Society he asked me to bring them before the R.H.S. Scientific Committee. At the suggestion of the Scientific Committee the material was submitted to Sir David Prain. The day following the meeting, I mentioned the plant to a friend in the Herbarium at South Kensington, and at his suggestion, I looked through their works on the Meconopsis family. In the *Annals of the Royal Botanic Garden Calcutta*, Vol. IX, 1, p. 4, I found the original description of Meconopsis superba, King, ex Prain:—"A tall, softly hairy herb, probably 15-20dm. high (—2 ft. to 2 ft. 8 in.), stems 4cm. diameter about 5dm. from top, simple, hirsute like leaves, with soft, spreading, flexuous hair and densely clothed with soft, grey pubescence; cauline leaves sessile, amplexicaul, obovate oblong, serrate acute, 25-50cm. long, 7-10cm. wide, passing upwards into similar but smaller bracts; cymes simple, rather dense-flowered, pedicels short, never exceeds 3m., 2-3 in each axil, sepals 4-5 cm. long; margins of petals entire; ovary globose, 7-11 valvae densely clothed, with adpressed setae and with close stellulate pubescence. . . . . . This very fine plant has been only once collected. . . . The fruit is unknown. . . . . . . Specimen from Ho-Ko-Chu, Chumbi, Bhutan . . . Eastern Himalayas, about 10,000 feet above sea-level."

From this description and a good illustration of the plant I had very little doubt that my plants were this species. Sir David Prain, who kindly looked over the material submitted to the R.H.S. Scientific Committee, stated in a letter to Mr. F. J. Chittenden, "Mr. Ashton Lofthouse's Meconopsis, judging from his leaves and capsules and photographs, is the one Sir George King named M. superba."

In a later letter received after I had sent a photograph to him showing the basal rosette of one of the plants, taken after my visit to London, Sir David gave the following interesting notes:—"I am particularly glad to see the photograph of the rosette. The picture in Vol. IX of the Calcutta *Annals* was naturally made by one of my native artists from the best specimen in the Calcutta Herbarium, but he could not show the basal leaves because Dungboo did not bring any, and it was only by the agreement with paniculata and Wallichii in other features that I placed superba in their group; both of them have a persistent crown. When Sir George King first named the species M. superba, specimens were sent to Kew, and the late Mr. Hemsley, their Assistant for India there, who was a very cautious worker, felt inclined to suppose that the prepared M. superba might be only a variety of the yellow-flowered M. paniculata which, at Kew in their days was supposed to be M. nepalensis. As a result of this, Sir George never published a description of M. superba. It was not until 1895, when I had an opportunity of studying all the material they then had in Paris, sent by the Jesuit missionaries in Yunnan and Szechuan, that I was able to satisfy myself that Sir George's M. superba is a perfectly good species. Sir George King's collectors must have got at one time or another all the species in Sikkim and in eastern Nepal; our people went annually to obtain supplies of Himalayan seeds for distribution to the botanical institutions in correspondence with the Calcutta garden. But Dungboo, his best Lepcha collector, only once went into Bhutan, and informed us that he would not make another journey there lest he be made a prisoner and a slave! Since those days the difficulties have practically disappeared, but poor Dungboo is no longer alive." *T. Ashton Lofthouse, Linthorpe, Middlesbrough.*

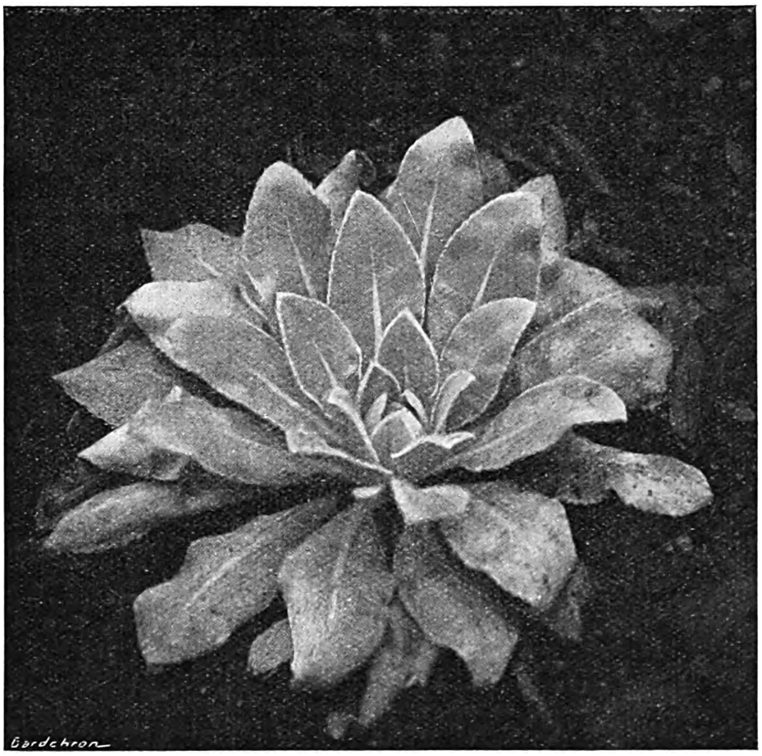


FIG. 113.—MECONOPSIS SUPERBA.
Photographed on January 31, 1928.

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THE RÔLE OF MYCORRHIZA IN PLANT GROWTH.

(*Concluded from p.* 214.)

THE exact significance of the calcifuge habit is still somewhat obscure.

The effect of lime upon plants showing this peculiarity varies in degree, and the existence of conflicting records concerning the behaviour of certain cultivated species suggests that the inimical effects of calcareous soil may depend upon the interaction of more than one set of factors.

It is, perhaps, significant that many species sensitive either to the presence or to a deficiency of lime in the soil form root associations with micro-organisms—nodule bacteria or soil fungi, as the case may be, but it would be unwise to assume that the lime-shy habit is due to the same causes in all groups. The common Ling (Calluna vulgaris) is typically calcifuge. It does not occur wild on soils containing appreciable amounts of lime, and its distribution on those overlying limestone or chalk is strictly delimited by the presence of a sufficient depth of soil from which the lime salts have been thoroughly leached by rain. Among Ericaceous species, avoidance of lime is frequently correlated with a marked preference for peaty soils of acid character. Ling, however, grows freely on a wide range of soils, provided they are free from appreciable amounts of lime or chalk. The reaction of this plant to calcareous soil has been carefully studied in the laboratory, and a brief summary of the conclusions reached may be of interest in relation to the mycorrhizal habit shown by this species in common with all members of the Ericaceae.

Attempts to raise seedlings of Ling in calcareous soil result in delayed germination and reduced germination capacity. The seedlings are unable to root freely, root growth is hindered and distorted, normal mycorrhiza is not formed, and the young roots become enveloped by colonies of bacteria. The last is a secondary effect, and does not appear to be an active factor contributing to the final result. As might be expected, shoot growth is practically stationary, and there is marked discoloration of the leaves. All these effects have been shown to be due to a definite chemical factor or factors present in the water extract of a calcareous soil. With great probability, this factor may be identified with the alkaline reaction produced by the lime salts present, rather than with any direct action of these salts. What is not yet perfectly clear is whether the deleterious action depends for its full effect upon properties normally present in calcareous soils, *e.g.*, the balance of other mineral salts present.

Calcareous soils usually show fairly definite characters in respect to this, and Mr. Grove's observations on Rhododendrons,* would have had a special interest in this connection had some of the experimental plants been planted in soil of a non-calcareous type, and then heavily dressed with lime or chalk, as were the others.

I have myself supplied large doses of lime-water to a pot plant of Rhododendron ponticum over a considerable period without observing ill effects, and it is interesting to note that the experimental cultures of Calluna just referred to provided evidence that the damage to plants potted in limy soil could be mitigated by supplying them regularly with a water extract of a soil favourable to the plant, whereas control plants supplied with the same amount of rain-water showed no such effect. While it is true that normal mycorrhiza was not formed in calcareous soil by any of the experimental Calluna plants, and that the root fungus showed a marked tendency to become parasitic in the absence of humus, it must be noted that the latter, grown apart from its host, is surprisingly immune from the deleterious effects produced by lime upon the Calluna plant. For example, it grows indifferently in a watery extract of limy soil—fatal to the host plant—and in a similar extract of a soil in which Ling flourishes. It may be inferred that the failure to form functional mycorrhiza is due to an inimical effect of calcareous soil upon the vascular host, or to a parasitic tendency induced in the root fungus by the deficiency of humus in such soil, or by the interaction of both these causes. Unfortunately, the matter is not susceptible of final proof owing to the presence of mycelium in all plants of Calluna past the earliest seedling stage.

Similar observations have been made on Erica carnea, and it is hoped that these may throw further light on the exact conditions that render lime so toxic to some Ericaceous species and not to others.

The fact that there should be a difference of behaviour in respect to this within the limits of the genus Rhododendron, likewise, is not in itself surprising (vide *Gard. Chron.*, November 26, 1927, p. 426).

The seeds of some species of Rhododendron are certainly infected by mycelium before they are shed; those of others have been claimed to be free from such infection. It is not yet known whether the proper development of the seedling in this genus is bound up with infection, or not, nor has the mycorrhizal fungus been isolated from any species. It is probable that the root fungi of Rhododendrons belong to the same group as do those of Calluna and other Ericaceous species in which they are known. There can be little doubt that the latter may—in varying degrees—utilise atmospheric nitrogen, and it may be inferred that those of Rhododendrons will be proved to possess the same power. In Ling, the widespread distribution of mycelium in the leaves and throughout the shoot tissues is significant in relation to nitrogen fixation. The relatively greater vigour and abundance of mycelium in the leaves of certain species of Rhododendron is very striking and a fact of extreme interest in the same connection. The tolerance of lime shown by some of these Chinese species may be related in some way to this, and certainly invites inquiry. Indeed, the genus Rhododendron is so large, and of such surpassing interest to lovers of horticulture, that it would undoubtedly repay experimental investigation.

A word as to the systematic position and distribution of those mycorrhizal fungi whose identities have been established. The forms associated with tree mycorrhiza belong to that great group of higher Basidiomycetes, especially Hymenomycetes, whose fruit bodies are so conspicuous a feature in woodlands. One of the most interesting contributions recently made to the subject was the proof supplied by Melin that a number of species of Boletus common in Coniferous woods, are the root symbionts of Pine, Spruce and Larch. Mycelium of all these forms must be widely distributed in woodland soils, and research is needed to determine whether it would be desirable to take steps to ensure their presence in newly afforested areas (see *Gard. Chron.*, p. 214).

The root fungi of Orchids are generally recognised as belonging to a common group sometimes included in the well-known genus Rhizoctonia, sometimes placed in a new genus, Orcheomyces. Mycelium of these forms must be locally present about the roots of Orchids, but nothing is known as to their general distribution in soil, or their relationship with other fungi included in the genus Rhizoctonia. The mycorrhizal fungi of Calluna and its allies have been placed in the genus Phoma. Mycelium of the various strains must be locally distributed in Heath and moorland soils carrying Ericaceous vegetation, but there is no certain knowledge of their wider distribution.

Outside these specialised groups, the fungi responsible for mycorrhiza formation still await identification. As pointed out earlier, the mycelium found in a majority of herbaceous perennials is of uniform type with characteristic structural features, and resembles that known to occur commonly in decaying plant detritus. It has hitherto resisted all attempts at isolation. Speculation attributes it to a member of the lower fungi, but nothing is known with certainty as to the systematic position of this widely distributed soil fungus.

On the view put forward recently by an Italian botanist, Peyronel, root infection in mycorrhiza plants is frequently of a dual character involving primary infection by mycelium of the kind just described, followed by secondary infection by that of the type associated with Orchids. Whether this "double" infection is of biological interest is at present unknown.

The experimental results that have been briefly summarised in these articles point especially to the significance of mycorrhiza in relation to the assimilation of nitrogen by vascular plants. It is certain that the severity of the "struggle for existence" in the plant world not uncommonly centres about the supply of suitable nitrogen compounds. It is not unreasonable to believe that the mycorrhizal habit so common in vascular plants, like the root nodules of Legumes, is but another manifestation of the urgency of this problem. In two of the three groups of mycorrhiza plants just considered, experimental research has provided evidence that this is actually the case.

Finally, if we enquire into the bearing of modern researches on the older theories of "symbiosis" so strongly urged by Frank and Stahl, it may be concluded, I think, that they provide firm support for the view that the possession of mycorrhiza is frequently of service to vascular plants, the extent of such benefit being related directly to the character of the soil and the exact nature of the relationship between fungus and host in any given case. The application of these results to natural conditions raises problems of great importance, especially to foresters, and opens up a new and promising field of biological research. *M. C. Rayner.*

A REVISION OF VIOLAS.

(*Continued from p.* 215).

VIOLA SABULOSA, Boreaud, is given by Farrer as synonymous with V. Curtisii, Forster; but both are Schweigg's maritima variety from the Channel Dunes, of typical V. tricolor.

V. sagittata, Aiton, the Spade-leaf Violet, is worth rather more notice than Farrer accords it, although Mr. Bowles also dismisses it as a "pretty blue Violet." It is one of the most widespread of American Violets, ranging from Massachusetts to Louisiana and to the Great Lakes. The southern forms are glabrous; the northern, pubescent. The flowers are borne on long stems above the leaves, and are a peculiarly bright shade of violet-purple. It frequents wet meadows, as at the southern ends of Lakes Huron and Michigan.

V. sarmentosa, Douglas, is known in cultivation under Greene's name of V. sempervirens—which ought not to be confused with a Violet named sempervirens in catalogues, that is an unauthorised form of V. odorata. Whether the fact that V. sarmentosa of Marschal-Bieberstein is synonymous with V. odorata has anything to do with this I do not know, but the fact is suggestive. It is a species with creeping stolons, leathery, evergreen leaves which are cordate-orbicular in outline and covered with brownish dots, and flowers of medium size, yellow, veined with brown, on stems about as long as the leaves. It is a common Violet of open woods from British Columbia to California, along the coast and not ascending into the mountains.

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* *Gard. Chron.*, November 26, 1927.

V. scabriuscula, Schweinfurth, is now known under the same author's name of V. eriocarpa. The differences between this and V. pubescens have been discussed under the latter. It is a plant of low, open, damp woods and thickets, from Manitoba to Nova Scotia, thence south to Georgia and Texas, rising to 4,000 feet in Virginia. This species may be obtained from a few English growers. It is a small but very bright yellow Violet, flowering in early March, and easy to cultivate.

V. Schultzii, Billot, is V. canina sub-sp. montana var. Schultzii. It is not peculiar to Alsace, nor is it always pale yellow, as it is found with white blooms on the Euganean Hills near Venice, on the Freising Moors near Munich, as well as at Hagenau in Alsace. The differences between this and the type do not seem to be of garden value.

V. sciaphila is a name that does duty for no fewer than four species, but it is probable that the one to which Farrer refers is V. sciaphila, Koch, which is a synonym of V. pyrenaica, Ramond—a botanist more famous in connection with Ramondia than with the Violet. There seems to be no reason for supposing that this is more a woodland plant than V. hirta, and both are more or less hairy or more or less glabrous—although V. hirta tends to the former and V. pyrenaica to the latter. The leaves of the latter are, however, always quite pubescent when young. The flowers of V. pyrenaica are rather smaller, are dark violet, but white from the base of the petals almost to their middle point, and are sweetly-scented; whereas those of V. hirta are larger, pale violet and scentless. V. hirta is native to the most of Europe, including the south of England, and extends through the Caucasus to Turkestan and Siberia. V. pyrenaica on the other hand, is more an European of the south and of the Alps, is common in the Pyrenees and in Cantabria (where on the Picos de Europa it is found beside the melting snows at 7,000 feet), and does not enter Asia except rarely at alpine heights above Tiflis in the Caucasus.

V. scopulorum (Gray), Greene, is in stem, leaf, capsule and seed, half the size of V. canadensis. Otherwise there does not appear to be much difference. It is a native of Colorado.

V. Selkirkii, Pursh, is an extremely dainty Violet, which, in addition to its own value, has two points of interest: first, it is strictly circumpolar, that is, it is native to all countries bordering the Arctic Ocean, with two offshoots to the south—one to the Caucasus, and the other to the hills of Massachusetts; the second, it is said to be named after the sailor, Alexander Selkirk, the Robinson Crusoe of Defoe. I do not know the basis of this statement, as Robinson Crusoe, so far as I remember, sojourned during the most momentous part of his career, in a fertile South Sea Island; whereas V. Selkirkii inhabits the inhospitable north. The plant was discovered on hills near Quebec by John Gildie, a Scotchman, who traversed North America in search of plants early last century. It was, however, first published in 1822 in the *Edinburgh Philosophical Journal* as V. Selkirkii, Pursh. Enticing as the Robinson Crusoe origin may be, I hazard the guess, although I have no proof, that the plant may in reality have been named from the Selkirk mountains in eastern British Columbia. In one third point V. Selkirkii is of interest—it is another of the Violets which cross from Asia to America. "Many of our north-western American plants," writes Brainerd, "have reached us from northern Asia across the Bering Sea, often migrating southward along the Rocky Mountains, even to Colorado, from which state I have received many specimens of V. Selkirkii and of V. biflora L., another Eurasian species." *E. Enever Todd, Lt.-Col.*

(*To be continued*).

NOTES ON CONIFERS.

XXIV.—Pinus Thunbergii.

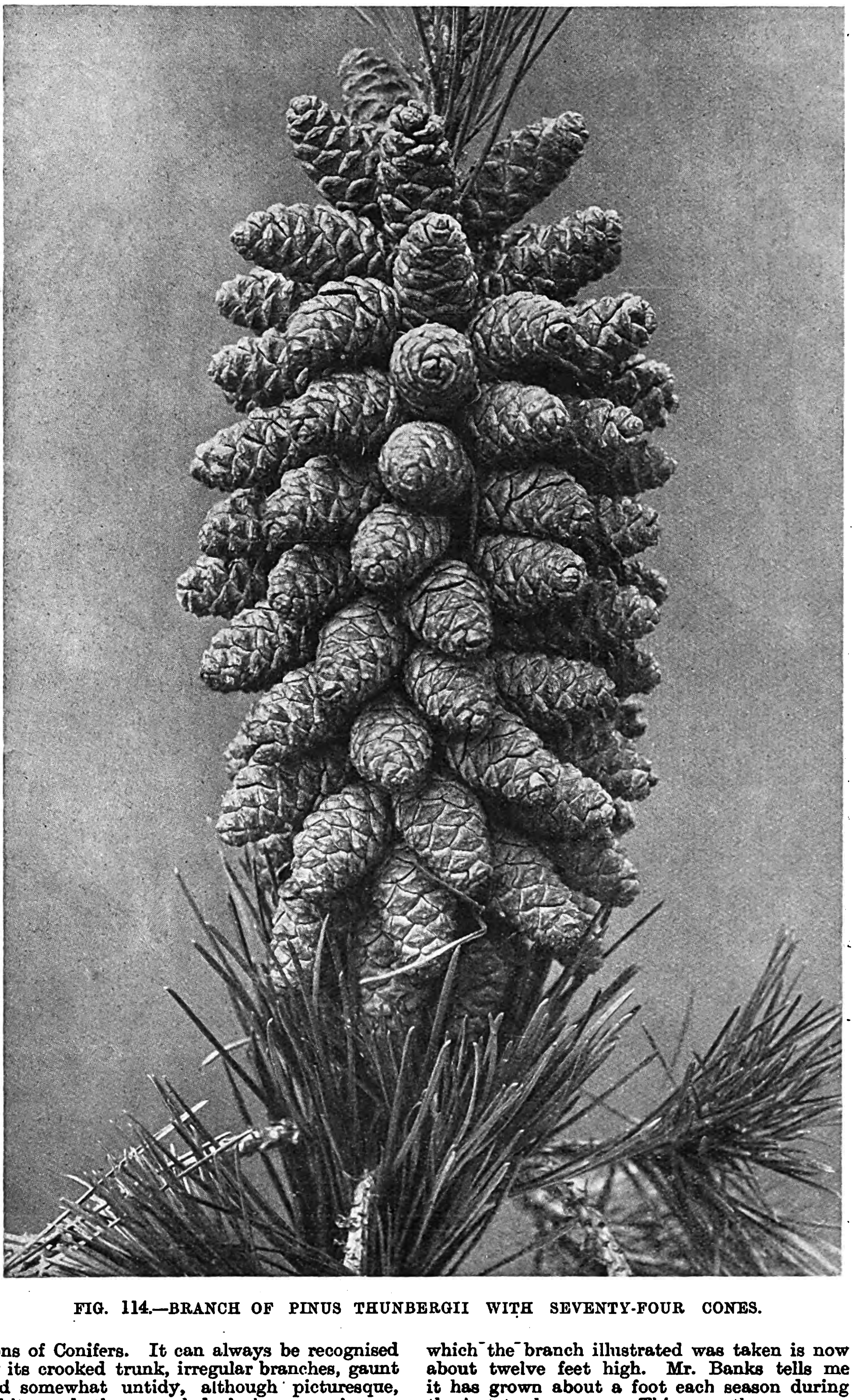

FIG. 114.—BRANCH OF PINUS THUNBERGII WITH SEVENTY-FOUR CONES.

One of the least ornamental of the Pines introduced to our gardens during the last century, this Japanese species, although often overlooked, may generally be met with in most old collections of Conifers. It can always be recognised by its crooked trunk, irregular branches, gaunt and somewhat untidy, although picturesque, habit, and the crowded dark green leaves, spreading in star-like fashion at the apex of the branchlets. The greyish-white winter buds, with cuspidate points, are very characteristic.

Pinus Thunbergii occasionally produces an abnormally large number of cones on a single inflorescence. In 1909, the branch of a tree at Kew bore no fewer than sixty-five cones, but this number was exceeded in 1926 by a tree in the collection of my friend, Mr. W. H. Banks, at Hergest Croft, Kington, Herefordshire, which produced seventy-four cones as shown in the accompanying photograph (Fig. 114). This tree is growing on the upper slope of a ravine facing south-west, 600 feet above sea-level. Here is a group of about twelve trees, planted in the spring of 1915, and that from which the branch illustrated was taken is now about twelve feet high. Mr. Banks tells me it has grown about a foot each season during the last twelve years. This year the cones are not quite so numerous. The other trees show the same tendency to produce large clusters of cones, but there are fewer cones to the cluster. As might be expected, the trees with fewer cones are more vigorous in growth.

Pinus Thunbergii, or the Black Pine, occurs in Japan from southernmost Kyushu to the northern limits of Hondo, forming extensive forests or scattered through the coastal savannahs. It has been planted from a very early period in gardens and about temples, and consequently it is impossible to-day to determine its original geographical range. In Japan there are many old and famous specimens of this Pine which are the objects of veneration, and long pilgrimages are often made to see them. It is also largely planted in Japan for forestry purposes, and is very valuable for fixing sand dunes and for shelter belts, while it has been tried with some success on sand dunes in Ireland.

Pinus Thunbergii is one of the trees introduced by the famous traveller and collector, John Gould Veitch, in 1861. It does not attain to any great size in this country, and most of the trees I have measured do not exceed fifty feet in height.

This species has occasionally been confused with Pinus Massoniana, a Chinese Pine not in cultivation. *A. B. Jackson.*

ORCHID NOTES AND GLEANINGS.

DENDROBIUMS.

The large, pure-white flowers of the warmth-loving Dendrobium formosum, that are produced at the apex of the stem during the autumn months, keep in perfection many weeks.

Plants that have been resting in a warm house are now commencing to grow, and any that require fresh rooting material may be attended to, using baskets or well-drained pans and a good open compost of coarse fibre and Sphagnum-moss. The plants may be grown suspended in a sunny position in the warm house, where they may receive plenty of atmospheric moisture and a circulation of air during the growing season; after flowering, the bulbs should be well-ripened by exposure to all available light, and water may be gradually withheld, only sufficient being required to keep the bulbs from shivelling.

This Orchid will deteriorate if removed to cooler quarters.

The lovely autumn-flowering Dendrobium Phalaenopsis and its varieties, together with D. bigibbum and others of this section, that require growing in the warmest house throughout the year, are showing signs of renewed activity in the roots and growths, and any that require repotting may now receive attention.

Small, well-drained pans are the best receptacles, and three-parts Osmunda fibre to one-part Sphagnum-moss, pressed firmly amongst the roots, makes a good rooting medium; water sparingly until the roots are well-established. The stems should be made secure to prevent root disturbance, and as the roots and growth advance, copious supplies of water at the roots and frequent syringing overhead will be required until the graceful flower-spikes are produced near the tops of the new growths, when syringing may be discontinued and water at the roots gradually diminished. After the flowering period the plants may be kept rather dry until spring.

These Orchids are best grown suspended in a light position in the warmest house and only require shading from very strong sunshine.

A small scale insect often infests these species and should be removed so soon as detected.

The Dendrobium beetle, the grubs of which perforate and often tunnel the stems and do considerable damage, is occasionally present in newly imported plants. They should be searched for and infested portions cut away and burned; the cut surfaces may be dusted with powdered charcoal or fine sulphur.

The evergreen Dendrobium densiflorum and its varieties are easily grown and are free-flowering. Although the flowers do not remain in perfection for a long period, they are amongst the most beautiful Orchids grown.

The flower racemes are now showing, and the plants require a light position in the intermediate house; excessive watering at the roots should be avoided, or the buds will drop. The flowering period of these Orchids may be prolonged if the plants are removed to cooler and dryer quarters as the flowers expand. *W. G.*

FORESTRY.

PINUS CONTORTA OR P. MURRAYANA.

During the past fifteen or twenty years the North American Pine, known as Pinus contorta, or P. Murrayana, has been brought to the notice of British foresters, and is being gradually recognised as a species which may be worth growing under certain conditions and for certain purposes. A question of importance, but one still open to doubt amongst many dealing with this tree, is whether the two names are to be regarded as synonymous, or apply to two different types of the same species, and whether these types may be obtained true to character.

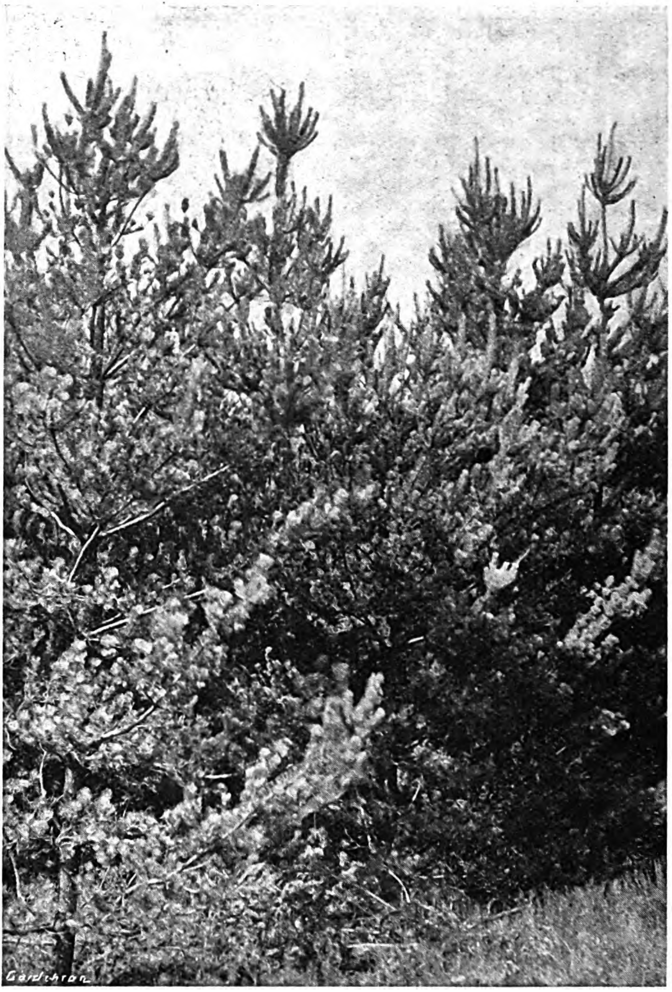

FIG. 115.—PINUS CONTORTA AT SHERBAEK.

Planted in 1912, photographed in 1922.

In North America the timber of the species known as the Lodgepole Pine has attained economic value, and where two geographical types are recognised, the Lodgepole Pine is invariably known as P. contorta var. Murrayana, or simply P. Murrayana. This variety is practically confined, in its typical form, to the Rocky Mountains, or the region east of the Cascade Range. This type is well-known by its straight stem and short branch habit. The needles are relatively short and stout, and the growth slow, but fairly uniform from year to year. The other type, which American foresters apparently refer to as P. contorta, is indigenous to districts further west, and is usually regarded as a scrub Pine of no economic value on the poorer soils and rocky outcrops, to which it is usually confined. Its needles are longer, more slender, and a darker green than the type previously described, and its growth on average soils is much more rapid. The branches are longer and the crown denser than in the P. Murrayana type. At first glance, and without detailed examination, it might easily be mistaken for Pinus insignis.

When the literature on these Pines is consulted, the general conclusion arrived at is that American authors do not always distinguish between them, treating them in this respect as they do the coastal and inland forms of the Douglas Fir, which gradually merge from one type into the other as one goes from east to west, or *vice versa*. Sargent, in his manual of *The Trees of North America*, states that P. contorta is described as the Scrub Pine, usually fifteen to twenty feet in height, or occasionally thirty feet, with a stout trunk rarely more than eighteen inches in diameter. Its habitat is given as Sphagnum bogs, sand dunes and barrens, and it gradually changes on the coast ranges and Cascade Mountains into the Lodgepole type (variety Murrayana), with an average height of seventy to eighty feet, and two to three feet in diameter.

Whitford and Craig, in their *Forests of British Columbia*, published by the Canadian Commission of Conservation, identify the Lodgepole Pine as P. contorta, Loudon. The authors state that, "on account of the variable character of this species, botanists have attempted to establish specific distinctions between the scrubby type found in the coastal region, and the tall, straight type which grows in the Rockies. The former is recognised as the typical P. contorta, and the latter as either P. Murrayana or P. contorta Murrayana. As the botanical distinctions all break down when applied generally it may, for practical purposes, be considered a single species."

In contrast to the above authors, D. T. Mason, the author of a *Bulletin* issued by the Forest Service of the United States in 1915, regards P. contorta as the correct name for the Lodgepole Pine, and does not refer to any variety as occurring throughout the entire range of distribution of the species, except in a footnote which reads as follows:—"The form of Lodgepole Pine occurring in the Rocky Mountains now known as P. contorta has also been known as Pinus contorta (var. Murrayana), and as Pinus Murrayana." This author would, therefore, appear to regard Pinus Murrayana as an obsolete name, or one based on locality rather than type characteristics.

Coming to British authors, Veitch's *Manual of Coniferae* states that P. contorta in Great Britain is "a low, erect tree of symmetrical outline, and planted solely as a decorative subject. It is of slow growth, specially dense in habit, not taking up much room, and clothed in persistent dark foliage the distorted state so prevalent in the Pacific being altogether absent, and the variety Murrayana forming a larger tree with a more diffuse habit."

Elwes and Henry, in *Trees of Great Britain and Ireland*, distinguish two varieties of P. contorta, one known as the Shore Pine, or typical P. contorta, ten to thirty feet high, although attaining to sixty or seventy feet when sheltered and in good soil, and the other, P. Murrayana, a variety of the former. The tallest specimens of the Pine recorded by these authors, and planted as P. Bolanderi, measured in 1906, twenty-eight feet in height, with a girth of three-feet-one-inch.

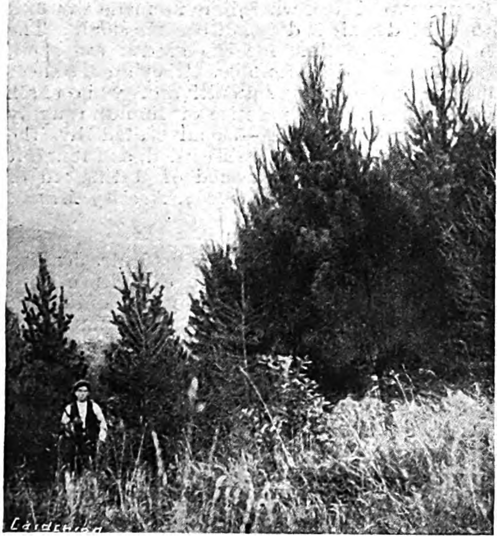

FIG. 116.—PINUS MURRAYANA (LEFT) AND P. CONTORTA (RIGHT), AT AVONDALE, CO. WICKLOW.

It is evident from the above extracts that while the majority consider P. contorta as the correct name for the western type of the species, indications regarding its growth and development are extremely indefinite, and the statement made by Elwes and Henry applies more or less to all species which are capable of growing on both good and bad soils. The description given in Veitch's *Manual* is rather difficult of application to either type, while Sargent evidently describes Pinus contorta as found on the poorest type of soil only.

The importance of nomenclature in connection with this species may be very slight, so far as the botanist is concerned, who may, if he chooses, simply regard the two forms as geographical types of the same species. The same view may be taken of the various forms of Mountain Pine or any other Conifer which has a wide range of distribution, but for practical purposes the importance of the correct name being given to a particular type is much greater. If one type reaching a height of sixty or seventy feet, and another a height of twenty or thirty feet, are both known by one name by mere accident or arbitrary decision on the part of individuals, it is evident that foresters may be frequently faced with difficulties when ordering seeds or plants of a type which they have in their mind's eye. Now that seed supplies of Pinus contorta are being obtained in fairly large quantities, it would appear desirable that these two varieties should be as clearly recognised as those of the green, grey, and blue Douglas Firs, the upright and spreading forms of Mountain Pine, or other varieties which have a similar bearing on practical forestry.

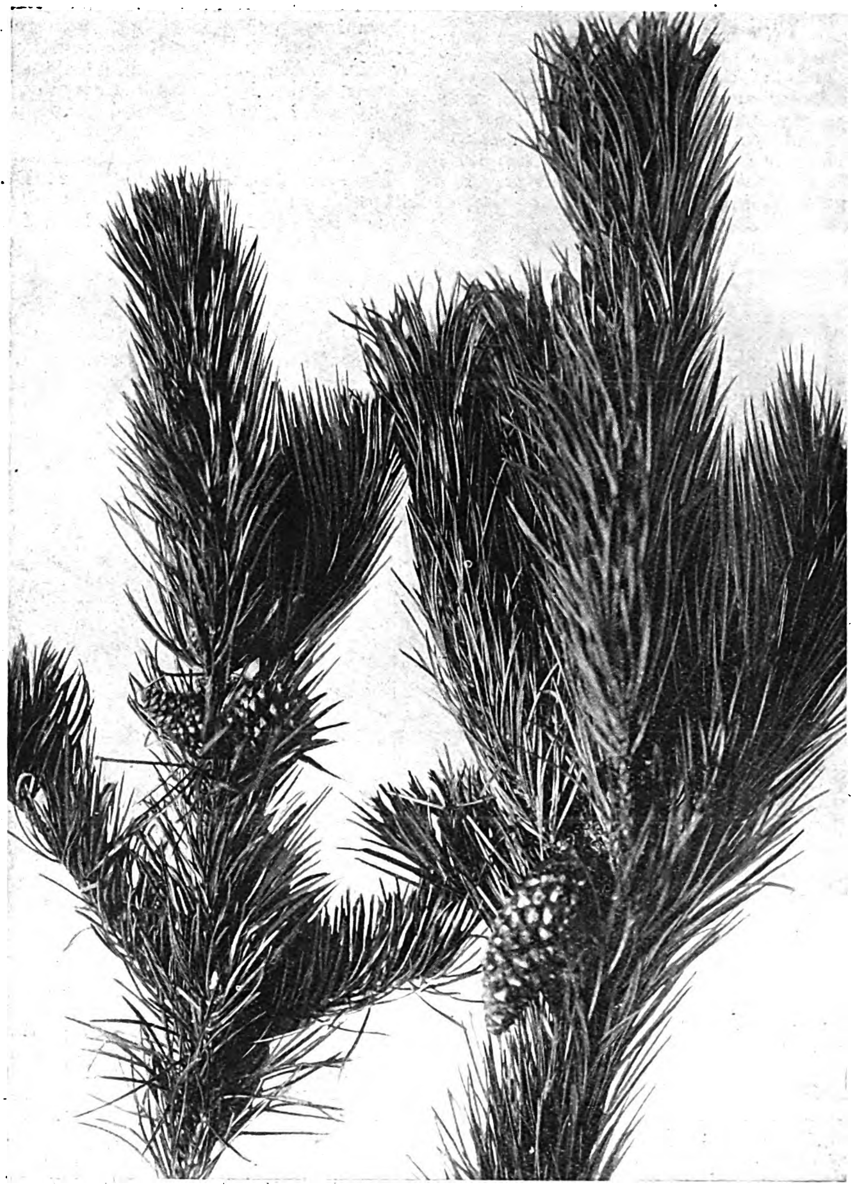

FIG. 117.—LEFT, PINUS MURRAYANA, TWO YEAR'S GROWTH; RIGHT, P. CONTORTA, ONE YEAR'S GROWTH.

The result of planting Pinus Murrayana in the place of Pinus contorta may not be serious from an arboricultural point of view, but so far as our experience in Great Britain goes, the growth of the former is much slower than that of the latter, and consequently gives rise to quite different results. The chief use of Pinus contorta is that of a nurse tree on poor soils, where it forms a dense crown, providing a close canopy, and a thick humus layer. Pinus Murrayana, on the other hand, not only grows slowly, but forms no canopy unless planted extremely closely. The two types appear in this country to reverse their characteristics as timber producers, the Lodgepole Pine giving little indication of reaching timber size, while the other has in several situations reached a height of sixty or seventy feet. In the Rocky Mountains P. Murrayana forms dense stands after forest fires, and these are now being used for economic exploitation. According to Mason, in the *Bulletin* already referred to, this Pine may yield 5,000 to 8,000 cubic feet per acre at ages from 100 to 160 years, the most rapid growth being made between the sixtieth and eightieth years. The chief characteristics of these crops is the high proportion of stems per acre due to the extremely small crown development. No figures are available from North America to show the yield or growth of the western type, and it has apparently no economic value under the conditions in which it exists on that Continent.

How far Pinus contorta may be looked upon as a timber tree in Great Britain has yet to be ascertained. The species has been extensively planted in Denmark since 1912 or 1913, and from photographs kindly supplied by Mr. Haakon Rafn, of Copenhagen, it shows all the characteristics of growth there which are exhibited in Great Britain. Its rate of growth for the first ten or fifteen years averages two feet to three feet per annum, and shows no sign of slackening at that age. It appears to withstand wind quite as well as the Corsican Pine, and to be subject to no serious leaf-shedding diseases under average conditions. It may possibly develop a poor root-hold on soft or rich soils, and as already pointed out, the ultimate development of the tree may be still open to doubt.

On limestone soil, at Cong, County Galway, specimens planted in 1884 had reached a height of seventy feet in 1923, with straight stems and well-furnished crowns. These were planted as Pinus Bolanderi. Trees of Pinus contorta and Pinus Murrayana were planted side by side at Avondale, County Wicklow, and clearly depict (Fig. 115) the characteristics and the relative rates of growth of the two types, the former being full fifty per cent. higher than the latter in the course of ten years.

The question of getting seeds from the desired type is one worth taking up, especially in view of the tendency to confusion, or that of regarding these types as of little practical importance. The species is, of course, not likely to be of economic importance on good forest soils, but there certainly seems to be an opening for it on poor land, or that of an intermediate character, where a slight difference in the rate of growth, and the heavier needle fall may be of the greatest importance to other species mixed with it. *A. C. Forbes.*

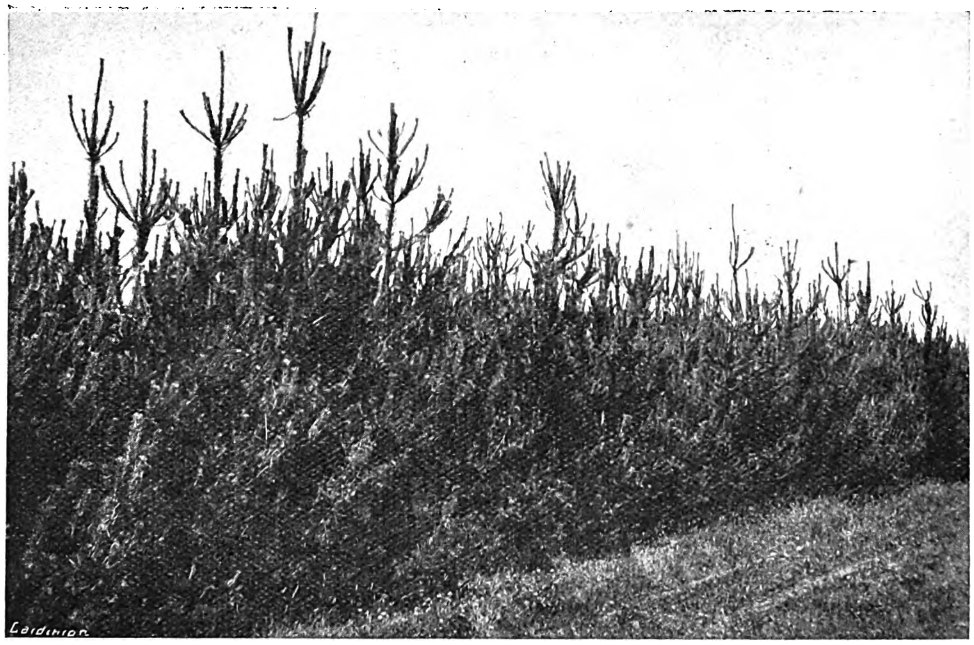

FIG. 118.—PINUS CONTORTA AT SHERBAEK, JUTLAND.
Planted in 1912; photographed in 1920.
(see p. 233).

HOME CORRESPONDENCE.

Pruning Stunted Trees.—I very much appreciate Mr. R. R. H. Moore's suggestion (p. 197), particularly as it comes just in time to enable me to try the winter treatment without delay. I am trying also the "hat-peg" method, which I described in my notes in the issue of January 14, and the heading down and top-grafting of three branches on a tree, using scions of the same variety as that of the tree being treated. *Market Grower.*

Pruning Roses.—In reply to Mr. W. Thomas's comments on pruning Roses in November, (see p. 180), I should like to point out that my experience of pruning Roses has not been confined to the south of England, for I have pruned so early as November in the north of Scotland, and never saw any damage done by frosts or cold winds, not even to the young growths of Gloire de Dijon, tied to open fences in exposed situations. The growths damaged after pruning are those that have been weakened by bleeding and are unable to withstand a cold snap in spring. By late March or early April, when some begin to think of pruning, bush and standard Roses will have made an inch or two of growth. Has Mr. Thomas, or any other Rose grower, ever noticed those young shoots damaged by frost or cold winds? I never have. If they remain unharmed early in the season, why should the dormant buds be destroyed when they start later on? I should like to suggest that all, or nearly all, of the Rose blooms exhibited by the leading growers at the principal shows are cut from maiden plants planted the previous year—they would not expect to find first-class blooms on ten-year-old beds. If time and labour permitted, I should lift and replant every other year. Mr. Thomas's mixture for making up Rose beds is rather complicated. I cannot understand why he advocates leaf mould and lime for Roses along with the other ingredients which he mentions. To return to the subject of pruning, I believe I recollect reading an article in *The Gardeners' Chronicle* several years ago by Mr. Robinson, of Gravetye Manor, which advocated pruning Roses in November, so that if I err, in doing so I err in good company—*Grigor Roy.*

Lime or Chalk.—In response to Dr. Marie Stopes' suggestion under the above heading in your issue of March 10 (page 180), I give my experience. I am in charge of a garden with a chalk subsoil, and chalk, in my estimation, provides quite good drainage, and is best left as such. In powder form it renders the soil sticky and greasy and is therefore harmful. A road cut out of the chalk formation here has a greasy surface with a stiff, rubber-like consistency. Chalk is cold and lifeless and has no beneficial chemical action on the soil that I am aware of. Lime, on the other hand, has warmth, a lively chemical action, and encourages root formation. Roots take possession of old lime-rubble heaps or enter old walls and form a network in the mortar. Lime has a chemical action on soil fertilisers and humus and it is also a good disinfectant and fungicide. A good general practice is to put a small amount of lime in all composts, unless for subjects known to be averse to lime, say, a tablespoon-full to 28 lbs. of compost. If double the quantity of soot be added to the compost, the odour of ammonia will be quite strong; a quantity of ammonia will escape, which need not be worried about as it is plentiful, but the compost will become ammoniated. The effect will be seen in the rapid and vigorous growth that results, especially in soft-wooded plants. According to some authorities, lime and soot should not be mixed as the ammonia is set free, but until the ammonia is set free it is of no use to the soil or plant life! Lime placed in the bottom of seed-boxes will save trouble and a trowel full of lime dusted along the open seed drills for culinary Peas will keep the seeds, especially of early varieties, from rotting. Bird life is shy of the white marks made by lime; rats do not like it spread about their entrance holes; and fruit trees benefit from being lime-washed. Cinerarias are sometimes troubled by neck-rot, but if lime is put on the affected part and water is withheld from the neck, the plants will probably recover. I once cut the diseased piece out of the neck of a big specimen and filled the hole with dry lime! The cut healed, new roots were emitted, and the plant was saved. Lime should be obtained in shell form and put in a box, covered and kept in a dry place; it will gently slake itself; but if left in the bag it will burst it. If immediate slaking is desired, the lime may be thrown in a heap outside, drenched with water and covered with soil; it will be fit for use the following day. Lime is obtained by quarrying limestone rock which, in the raw state, is similar in appearance to any other grey rock, but when burned in the kiln it becomes shell lime. It has no relation to the natural chalk formation whatever, except that both are white. A chemical formula such as quoted by Dr. Marie Stopes may be misleading. Whisky may be forty per cent. alcohol and sixty per cent. water, but a mixture of forty per cent alcohol and sixty per cent. water does not make whisky! In my experience, when lime is made wet and then dried again it does not become chalk. The best forms of lime for the garden are shell, old plaster, and lime rubble. They are the sheet anchor of the successful cultivator, while chalk is worthless. The practice of liming roughly dug ground in winter—as advocated by the text books—I have long discarded, as I found it was simply an easy method of getting rid of surplus cash. *George Murray, Rockley Manor, Wiltshire.*

Fallugia paradoxa.—In reply to Mr. Jenkinson's enquiry (p. 202) as to experience with Fallugia paradoxa, this plant grows quite well here in light loam with a sub-soil of flints and chalk. It appears indifferent as to aspect, and has withstood over 20° of frost. It produces, in the summer, small, white flowers not unlike those of a Potentilla, followed by heads of silky seeds; these germinate if collected at exactly the right moment, *i.e.*, when they are about to blow away. My stock came from seeds gathered on the plant grown in the alpine frame at Kew. The species is a native of the sun-baked slopes of South California, and, by rights, ought to die at once at Burford and at Kew. *William Lawrence, Burford, Dorking.*

Failures with Strawberries.—I was greatly interested in *W. B.'s* remarks on Strawberry troubles in your issue of March 3. Up to about nine years ago, Strawberries did remarkably well here; those planted three feet apart would practically cover the ground in the third year, and immense crops of excellent fruits were gathered. In later years, Strawberries have gone from bad to worse. Good, strong runners have been purchased and planted in well-prepared soil in the early autumn, but by the time the fruiting season arrived all that remain are half-starved-looking plants with a few miserable fruits, about the size of marbles. What is the cause? We have tried several varieties, but they all seem to suffer in the same way. We have treated the soil with well-known soil fumigants; we have sent soil and plants to Wisley and have been told that the soil is all right, with plenty of lime and humus in it. If only someone would help us, what a boon it would be. *H. F. M., Carshalton.*

New Garden Fertiliser.—During a visit to Berlin last autumn, my attention was directed to a new garden fertiliser put on the market by the great "Nitrogen Syndicate." It is called Harnstoll-kali-phosphor; in English, Urea-potash-phosphorus. I wonder whether any of your readers have experimented with it? On theoretical grounds one would expect that the results should be very good. There is no secret in the composition. It is a straight mixture of definite chemical substance—urea, ammonium phosphate, and pottasium nitrate—

analysing twenty-eight per cent. nitrogen, fourteen per cent. potash, and fourteen per cent phosphoric acid, all in soluble form. From the literature accompanying the packages (I bought a pound in a decorative tin for 1-20 mark), I see that it is claimed to be useful for pot plants, particularly in brightening the colour of flowers. It is, perhaps, worth remarking that it contains nitrogen in three useful forms—nitric, amide and ammoniacal, the amide being the form in which nitrogen is found in liquid manure. I should be glad to hear the result of experience with it. As a start, I am going to try it on Sweet Peas. *Vulpecula.*

Bacteria.—In all animal and vegetable infusions which have been left exposed to the air for a short time, there will be found, under the high power of the microscope, minute bodies of various forms, some round, others oblong, and others shaped like a cork-screw. These are called by the general name of bacteria. The smallest are perceived with difficulty under the best microscopes, and are certainly not more than one thirty-thousandth-of-an-inch in diameter; the largest are not thicker than one-thousandth-of-an-inch, although they are long in proportion, varying from one-thousandth to one-two-hundredth-of-an-inch. They multiply by lengthening and then dividing across; the divided portions then either separate or remain united in bead-like rows. These low forms of life are of great interest to both the horticulturist and the agriculturist. Cereals and other crops get the nitrogen which forms part of their substance from the nitrogenous compounds which exist in the shape of decaying animal and vegetable matter. Water containing nitric acid, and originally free from ammonia and nitrates, contains these compounds after being subjected to the action of bacteria. Inoculation of bacteria into the soil to assist in the production of various crops is a valuable asset to the grower, and it would be interesting to have the opinions of others on this immensely interesting subject. *Jack Hardy.*

Lime or Chalk.—The majority of gardeners, professional and amateur, do not realise the value of lime. The intelligent gardener does realise its value, and the notes by Dr. Marie Stopes and Mr. W. Auton should emphasise it. The best lime to use is burnt, slaked lime, like powder, spread on the land and dug or ploughed in. Lime is a fine soil disinfectant. Ground limestone is suitable for light soils that are deficient in lime, and where one can afford to wait. Carbonate of lime is very mild in action. I was once asked by a gardener why he could not grow Peas successfully. I told him his soil lacked lime; he replied that Peas did not need it. I offered to pay for the seeds if my advice led to failure. I recently disposed of 10,000 spring Cabbage plants that had been out all the winter in a very bleak and exposed garden; in many cases four score plants weighed from 18 lbs. to 20 lbs.; these were from land that would not grow Cabbages until I took charge and used lime. Last year, after using about 10 cwts. of lime, I had less than three per cent. of the plants affected by club root. This amount of lime may seem large for an eight-rood [? EDS.] garden, but I applied 4 cwts. and double dug it, and then spread the remainder on the top and scuffled it in with a rake. *E. T.*

Tulipa saxatilis.—In your issue of March 10, in reporting my lecture on "Plant Hunting in Crete," a mistake has been made which requires correction. Speaking of Tulipa saxatilis, I expressed an opinion, very tentatively, that had the late Mr. Dykes known of the existence of the diary of an Italian—Dr. Bennetti—written in 1680, it would have materially helped him in the study of the origin of our garden Tulips. You will remember that Mr. Dykes set out to discover the origin of our garden Tulips, and he admitted that he was entirely baffled by the problem. He expressed the opinion that it was possible that when the Turks grew Tulips in large quantities in Constantinople several centuries ago, they used as the parents the Tulips in some valleys of Asia Minor. I put forward the theory that the Tulips of Crete may have been the forerunners of the cultivated Tulips of Turkey and western Europe, and I based my theory on the diary of Dr. Bennetti. This diary is in the library of our Foreign Office in Whitehall. The writer states: "At a dinner given to me at Eyoub, on the Golden Horn, in the garden were magnificent Tulips growing three and four on a stem. They are imported from Crete." This was at a time when the sultans and amateurs rivalled each other in growing Tulips, and paid such extravagant prices that the Turkish Government were forced to prohibit the import as well as the exhibition which was held on the Square of Yeni Djami. Your report, therefore, should read Tulipa saxatilis, and not Tulipa cretica. The former we found in the gorges, and at low altitudes, growing eighteen inches out of the ground, with long, fleshy leaves, the largest of them two inches across, whereas Tulipa cretica is a small Tulip, rising six inches to seven inches out of the ground and found on the hills from 5,000 to 6,000 feet. *G. P. Baker, Hillside, Kippington, Sevenoaks.*

Escallonia Edinburgh.—Is this plant new or scarce? I saw, in a neighbouring garden, last summer, a nice plant called by this name. It was about three-and-a-half feet to four feet high and smothered with flowers of a pinkish shade. The plant was a well-grown bushy specimen, growing on a projecting corner of a border. It is customary to give the Escallonia a measure of protection, such as is afforded by a wall or fence, but this had neither. Never having heard of this variety until I saw the plant mentioned, nor being able to find it in any book or catalogue, is the reason for the above query. For those planting this kind of flowering shrub the subject of this note is really worth having; it was so neat-growing and floriferous. *C. T.*

[We believe the plant referred to is Escallonia edinensis; this is of similar parentage to E. langleyensis.—EDS.]

Anagallis tenella.—This dainty native plant, which is common in moist meadows and marshes in most parts of the British Isles, is an excellent plant for the edge of the bog garden, or for the margin of a small stream. Known as the Bog Pimpernel, it is a near relative to the Scarlet Pimpernel. It forms a prostrate, more or less circular patch of short, creeping stems, clothed with shortly petioled, small, egg-shaped leaves. The plant is hairless and rather succulent. From June to August it produces a succession of comparatively large flowers of a most glorious rosy shade, with darker veins. The flowers are about half-an-inch in diameter, and funnel-shaped. It is a perennial, and when in a suitable spot will soon spread and add interest to the bog in summer. *L. le C. T.*

Mulching Roses.—A correspondent states on page 118 that he does not think Roses derive much benefit from manure forked into the surface of the beds. We have constantly read of goodness washed out of the manure heaped in the open and not kept under a roof. Where is the goodness washed to if not into the soil below it? Are we to presume that nothing is washed down so deeply as the Rose roots? Presumably manure close below the roots, or mixed in the soil about the roots, may enable the roots to get (if they can use it) far more benefit before its virtue is washed out of reach. One would like to know the experience of other Rose-growers, or of those at experimental stations. *Vere Caldwell, Chandler's Ford.*

The Finest Flowering Tree.—I saw, on my journey to Brazil, Africa, Java and Sumatra, a good many beautiful trees—Amhetstia nobilis, Lagerstroemia indica, Brownea grandiceps, Leucadendron argenteum, Altingia excelsa and Spathodea campanulata; Herculia colorata covered with golden flowers, and Jacaranda filicifolia, large trees full of trusses of soft blue flowers at Potgietersrust; but the finest tree I saw was the beautiful Flamboyant at Weltenden, Batavia, and at Angola, south-west, Africa. I not only admired the branches of red flowers, but also the soft green leaves. *J. K. Budde.*

Commelina coelestis.—Although I have written recently on this beautiful plant in my little garden in North Cornwall, I am moved by the letters of your correspondents to repeat my experience. Four or five years ago, I raised some plants from seeds and have two survivors planted out. They start into growth very late—so late that I wonder every summer whether they mean to come up—and it is August before they begin to bloom. Then the lovely flowers, which are the bits of heaven that their name suggests, appear one after another amid the delicate green of the stems and leaves. I advise your readers to sow some seeds at once, and to beware of slugs. Commelina coelestis grows in a south border here and in a soil that is not specially light. *W. R. J., St. Ervan, Cornwall.*

The Genus Primula.—May I state with how much pleasure I see the beginning of your articles on The Genus Primula? The "common names" given do not seem to be wholly successful. The rarer species have no common names. If I were so fortunate as to possess P. aequipila, would any friend interested wish to be invited to "come and look at my Equally Hairy Primula"? I hope that the notes on cultivation will be so full as possible, and will, perhaps, be increased by the contributions of readers. *W. R. Johnson.*

VEGETABLE GARDEN.

SPRING CABBAGES.

THE recent articles dealing with the cultivation of Cabbages (pp. 125, 180), lead me to suggest that the following notes may be of interest.

For the past nine years I have conducted extensive trials of spring Cabbages in various parts of the county of Durham, the object of the trials being to find out the most suitable time for sowing, the best varieties to sow, and the best time to plant out.

As a result of these trials I have come to the conclusion that the most suitable time for sowing in this county is from July 25 to the end of the first week in August; if the seeds are sown before that time the percentage of plants that bolt is great, while if sown after the end of the first week in August the young plants are not large enough for transplanting in September.

Our seeds are sown in the open, and we find that soot, if dusted frequently on the seedlings, so soon as they appear, is the best protection against birds.

The best time to plant out is so early as possible in September. The spring Cabbages follow the early Potatos, for which crop the ground is well manured, so that no further dressing of manure is given for the Cabbage crop, but the ground is well harrowed and the plants are put out in rows two feet six inches apart, to allow of horse cultivation between the rows, and about fifteen inches apart in the row.

Before the bad weather comes, the young plants have a well-established root system, and are sturdy and hard, which enables them to withstand the winter well. In March they receive a dressing of nitrate of soda at the rate of one hundredweight per acre. In a normal season we begin to cut small Cabbages at the end of April and the remainder improve rapidly in size during the month of May.

The varieties that succeed well with us are Harbinger, Early Market, Early Feltham, Early Offenham, Flower of Spring and Mein's No. 1.

The treatment described enables us to clear the Cabbage crop early, and last year we were able to follow it with a crop of Cauliflowers, which brought in nice returns in the late autumn, and also enabled us to clear the ground in time for winter cultivation in preparation for the spring crops. This ground will be well limed, and will not carry any crop of the Cabbage family for three years.

On small allotments we find the above varieties equally as good, but the planting is always closer, usually one foot apart each way, and alternate plants are cut early in the spring. From a planting of fourteen thousand plants last September our losses are not above two per cent. *Dunelm.*

SOCIETIES.

ROYAL HORTICULTURAL.

March 27 and 28.—Although not quite so bright a show as that of a fortnight ago, the hall at Vincent Square was well-filled with exhibits on these dates. Orchids again occupied considerable space. Cymbidiums were staged in great numbers and of excellent quality. The Orchid Committee recommended one First Class Certificate and three Awards of Merit to novelties. The Floral Committee had fifty-one novelties presented for award, and of these they selected eight for Awards of Merit, and one for Trial at Wisley. The chief exhibits were of Wallflowers, in pots, Hippeastrums and general greenhouse plants, Carnations, Roses, forced shrubs and alpines. Narcissi were shown in increased quantity and very good quality. The Narcissus Committee recommended two Awards of Merit to novelties. Beyond several single dishes of Apples, the Fruit and Vegetable Committee had nothing to occupy its attention.

Orchid Committee.

Present: Mr. Frederick J. Hanbury (in the chair), Mr. Gurney Wilson, (Hon. Secretary), Mr. Lionel de Rothschild, Mr. A. Dye, Mr. J. E. Shill, Mr. Fred K. Sander, Mr. H. G. Alexander, Mr. J. C. Cowan, Mr. Robert Paterson, Mr. T. Armstrong, Mr. Richard G. Thwaites, Mr. J. Wilson Potter, Colonel Stevenson R. Clark and Mr. Charles H. Curtis.

First Class Certificate.

Cymbidium Rosanna var. Magnolia (*Kittiwake × Alexanderi*).—A fine form with rosy shading down the centre and base of the wide, blush-tinted sepals and petals; the rose-pink lip is freckled with red-brown. Shown by Messrs. H. Alexander, Ltd.

Awards of Merit.

Cymbidium Ceres, Wyld Court var.—A superb Orchid, and one that in our estimation was worthy of the higher award. The plant exhibited carried four large spikes, bearing from twelve to sixteen flowers. The sepals and petals are rose-coloured, with veins of deeper shade; the lip is white, with bright red-brown markings. Shown by Sir W. Cooke, Bt. (gr. Mr. H. Butcher), Wyld Court, Hampstead Norris.

Odontioda Grenadier, The Node var.—A very handsome variety with flowers of good size and excellent form. The sepals and petals are rich red-crimson, with a few dull yellow markings on the lip. Shown by Mrs. Carl Holmes (gr. Mr. Penton), The Node, Welwyn.

Cymbidium Eagle var. Excelsior (*Gottianum × Alexanderi*).—A beautiful variety, with large, finely-formed and substantial flowers, white, faintly-tinted with blush; lip purplish, with yellow disk and small, deep red-brown markings at the apex. Shown by Messrs. H. Alexander, Ltd.

Groups.

Messrs. H. Alexander, Ltd., displayed Cymbidiums in fine style, and arranged a big group of these popular and useful Orchids. The plants were all well-grown and the arrangement excellent. In such a fine set it was not easy to make a selection, but a few that attracted us were C. Redstart, C. Alexanderi, in variety; C. Ceres Westonbirt variety, particularly beautiful; C. Redwing, of pleasing colour; C. Butterfly, a very dainty colour and free-flowering; C. Letty var. Pink Pearl, C. Rosanna—of which we gave a Supplementary Illustration in September, 1927; C. insigne, C. Pauwelsii, C. Mollie, with a heavily-marked lip; the fine old C. Lowio-grandiflorum, C. Plover, C. Landrail var. aureum, and the richly-coloured C. Petrel.

Although Cymbidiums were the main feature of Messrs. Sanders' group of Orchids, the most arresting plant in this group was Bulbophyllum Fletcherianum (?), with a pair of big, broad, leathery leaves (one was two feet long) and a cluster of dull purple, vilely-odorous flowers. Dendrobiums, Odontiodas, Odontoglossums, Laelio-Cattleyas, Cirrhopetalum picturatum, and Aerides vandarum were included in the display.

Odontoglossum Boadicea was conspicuously good in Messrs. Armstrong and Brown's group; Cymbidiums formed the background and in the front were Brasso-Cattleya Bianca, Masdevallia Harryana var. Lindenii, Odontioda Zephyr and Miltonia Princess Elizabeth. Messrs. Cowan and Co. exhibited Odontioda Vuylstekae, O. Henryi, O. Lutetia, O. Juno, O. Bradshawiae (very fine), Sophro-Cattleya Maratara, various Dendrobiums, Cymbidiums and Cypripediums..

Messrs. Charlesworth and Co. showed fine spikes of forms of Odontoglossum crispum, O. Proteus, O. Lutetia, O. Matador, O. Princess Yolande, O. Reve d'Or, Odontioda Monica, O. Patricia and O. Leoniae, the last carrying a branching spike of thirty-one flowers. Messrs. Stuart Low and Co.'s group included Brasso-Cattleya Ruby, B.-C. Baroness, Stauropsis gigantea, with two short spikes, Oncidium Papilio, Luisia teretifolia, Bulbophyllum Sillemianum and Sophro-Laelio-Cattleya Niobe.

Cattleya Prince Shimadzu var. Titania with two large and gorgeous flowers, was shown by J. J. Bolton, Esq. (gr. Mr. S. Lyne), Claygate Lodge, Claygate. Mrs. Carl Holmes, The Node, Welwyn, sent Laelio-Cattleya Queen Mary, var. The Node, with flowers of very rich, deep mauve and purple colouring; and Odontoglossum Norba (Rossii × Mars), which received a Preliminary Certificate.

Fred J. Hanbury, Esq. (gr. Mr. Farnes) Brockhurst, East Grinstead, showed a very fine specimen of Dendrobium Victoria-Reginae, for which a Cultural Commendation was granted; from the same collection came Cymbidium Memoria P. W. Janssen.

Cattleya Trianae alba, Broomhill variety, Laelio-Cattleya McBeaniana and L.-C. Arcturus were all well shown by Messrs. J. and A. McBean. Mr. Harry Dixon submitted Dendrobium Brymerianum, Vanda Bensonae and a few other Orchids.

Floral Committee.

Present: Section A.—Mr. Henry B. May (in the chair), Mr. J. F. McLeod, Mrs. Ethel M. Wightman, Mr. William Howe, Mr. H. J. Jones, Mr. J. M. Bridgeford, Mr. D. Ingamells, Mr. M. C. Allwood, Mr. Hugh Dickson, Mr. E. R. Janes, Mr. James B. Riding, Mr. W. B. Gingell, Mr. D. B. Crane, Mrs. Helen Lindsay Smith, Mr. Charles E. Pearson and Mr. Courtney Page.

Section B.—Mr. Gerald W. E. Loder (in the chair), Mr. R. C. Notcutt, Mr. E. H. Wilding, Mr. J. Comber (visitor), Mr. George Harrow, Mr. W. B. Cranfield, Mr. Reginald Cory, Hon. Henry D. McLaren, Mr. L. R. Russell, Mr. Mark Fenwick, Lady Beatrix Stanley, Sir William Lawrence, Bt., Mr. G. Yeld, Mr. A. Bedford, Mr. T. Hay, Mr. Hiatt C. Baker, Mr. F. J. Preston, Mr. W. J. Baker, Mr. C. T. Musgrave, Mr. E. A. Bowles, and Mr. W. D. Cartwright, Secretary.

Awards of Merit.

Azalea indica Charme de Noel.—This is a particularly charming variety. The shapely bush bore large numbers of semi-double deep blush-pink flowers. This and the two following varieties were shown by Mr. W. F. Gullick.

Azalea indica Etoile de Belgique.—A fine half-standard was shown, and it bore plenty of semi-double, bright ruby-red flowers.

Azalea indica Triumph.—A graceful variety which produces good crops of semi-double deep rose-coloured flowers.

Carnation Evelyn Towneley.—A good, fragrant Perpetual-flowering variety, which appears to be free-flowering. The large, shapely flowers have serrated margins, and are of bright rosy-cerise colour. Shown by R. Chetwynd-Stapleton, Esq. (gr. Mr. W. Meager), Headlands, Great Berkhamsted.

Fritillaria latifolia (red form).—This is a darker and more sombre variety of the Broad-leaved Fritillary. The flowers have a reddish-purple sheen. This species is illustrated in the *Bot. Mag.*, Figs. 853 and 1,207. Shown by Mrs. W. R. Dykes, Bobbingcourt, Sutton Green, Surrey.

Iris japo-Watt.—As the name suggests, this is a hybrid Iris. Its parentage is given as I. japonica × I. Wattii. It is a robust-growing plant, approximating I. Wattii in foliage and habit, and bearing flowers about the size of those of I. japonica, of pale blue colour with an orange bar along the centre of each segment. Shown by E. A. Bowles, Esq., Myddleton House, Waltham Cross.

Pernettya mucronata Bell's Seedling.—A very desirable form of this useful berried shrub. It is of compact habit, and the stems have deep crimson colouring. The fruits, which are produced in quantity, are much larger than usual and of deep crimson colour. Shown by The Donard Nursery Co.

Saxifraga Mrs. G. Prichard.—A beautiful encrusted Saxifrage. The tufts of small leaves are silvery, and the relatively large flowers, which are freely produced, are of a pleasing blush-pink shade of colour. Shown by Messrs. M. Prichard and Son.

For Trial at Wisley.

Polyanthus Barrowby Gem.—An exceedingly beautiful single Primrose. The large flowers were all "pin-eyed" and of good, clear yellow colour. Shown by Messrs. M. Prichard and Son.

Groups.

A large collection of magnificent Hippeastrums was exhibited by Baron Bruno Schröder (gr. Mr. E. J. Henderson), Dell Park, Englefield Green. In addition to several good seedlings there were many excellent named varieties, and all bore large, rounded flowers of very good colours. The varieties included Dorothy, crimson; Andor, crimson; Cardinal Beaton, rose-cardinal; Marga, primrose-yellow, lightly flaked with rose; Flame and Pink Opal. These superb Hippeastrums were arranged above good Codiaeums, with a bordering of floriferous Lachenalia Nelson, and at one end there were excellent plants of Clivia miniata.

Well-flowered bushes of Mimosa (Acacia), Camellias in variety, and Richardia (Calla) Elliottiana were shown by Messrs. Stuart Low and Co. Mr. G. H. Dalrymple again staged a good collection of his coloured Freesias. There were several good seedlings and large vases of Buttercup, Old Rose and Yellow Hammer.

Messrs. Allwood Brothers' fine group of Carnations heralded one with fragrance, which was accounted for by the presence of a fine selection of Malmaison varieties. Of these there were large bowls of Delicata, the fine yellow Jessie Allwood, Atlantic, Oceanic, Marmion, and the enormous Mrs. C. F. Raphael. Of Perpetual varieties, Wivelsfield Copper, a distinct colour; Harmony, Laddie, Red Laddie, Cattleya Mauve, Maine Sunshine, and the beautiful Maud Allwood, were extremely well displayed, while other noteworthy sorts were Shot Silk, Spectrum, Eldora and Canadian Pink. One section of this group was devoted to Dianthus Allwoodii varieties, the most prominent being the rich crimson Barbara Improved, White Alfred, Pat Hugh and Marion.

A small group of Carnations of fine quality was arranged by Messrs. Stuart Low and Co. It included the striking Philip Sassoon, Ruby Glow, Topsy and Spectrum. The new pink perpetual Malmaison Dorothea, Eileen Low, Melchet Beauty and White Pearl were all well displayed, as also were Queen Mary, Daphne, Happidais and Sybil.

Fine blooms of the beautiful Carnation Mrs. A. J. Cobb, in good condition, were again staged by Messrs. A. F. Dutton, Ltd.

Another beautiful exhibit of Carnations was arranged by Messrs. C. Engelmann, Ltd., in which pride of place was given to Laddie, Red Laddie, Citron and Katja, while White Pearl, Topsy, Saffron, Coral Glow and Betty were merely a few of the choicest of this superb collection.

By the gallery Mr. Elisha J. Hicks set up vases of excellent Roses. His chief varieties were Climbing Lady Hillingdon, of rich orange colour; Souvenir de Claudius Pernet, clear yellow; Mrs. Herbert Stevens, a sweetly-scented white Tea variety, and Padre, glowing rose shades. Mr. George Prince displayed goodly vases of the richly fragrant Etoile de Hollande, Shot Silk, of lovely colouring; Padre and Gwyneth Jones, bright rose-pink.

A pretty exhibit of the floriferous Polyantha Roses was made by Mr. J. H. Pemberton. His chief varieties were Chatillon Rose, Golden Salmon, Juliana and Edith Cavell.

An admirable exhibit of Stock of the Beauty of Nice type was made by Lady Juliet Duff (gr. Mr. H. Weaver), Coombe Court, Kingston Hill, Surrey. The tall plants bore fragrant flowers of many desirable shades of colour.

In the annexe, Mr. W. F. Gullick showed a small collection of admirable varieties of Azalea indica, similar to those which received Awards of Merit. Messrs. R. and G. Cuthbert made an attractive display with well-flowered plants of Azalea mollis, Azalea mollis × sinensis, and Azalea indica varieties. Messrs. Reamsbottom and Co. again staged bright flowers of their Anemones and Mr. B. Pinney had bunches of Sweet Violets.

Immediately inside the entrance, Messrs. Sutton and Sons had a fascinating exhibit of well-flowered Wallflowers growing in relatively small pots. The many excellent plants were tastefully arranged in batches of distinct colour on a ground work of woodland moss. Besides such good yellows as Giant Yellow and Yellow Phoenix, there were Blood Red and Phoenix. Other shades with descriptive names, such as Giant Ruby, Purple Queen, Orange Bedder and Primrose were included.

In a corner group, Messrs. L. R. Russell, Ltd., showed good plants of Rhododendron Dalhousiae, R. Lady Alice Fitz William, standard Azalea indica varieties, bushy Wistaria sinensis, and Dicentra spectabilis.

An admirable collection of alpines in pots and pans was shown by Mark Fenwick, Esq. (gr. Mr. F. Tustin), Abbots Wood, Stow-on-the-Wold, with a background of dwarf, floriferous Japanese Azaleas. The alpines included Saxifraga Griesbachii, Daphne tangutica, Primula Linda Pope, P. pubescens, P. marginata coerulea, Tulipa Eichleri, T. Clusiana and Rhododendron Chamaecistus. A. J. Sewell, Esq. (gr. Mr. T. Kench), Ronneby, Weybridge, also showed alpines in pots and pans, and included good examples of Primula Zuleika Dobson, P. hirsuta nivea, Saxifraga Griesbachii, Daphne rupestris and several distinct sorts of Arabis.

Mr. G. Reuthe had an interesting collection of some of the small-flowered Rhododendrons, with good trusses of R. barbatum, R. arboreum hybrida and R. arboreum nigrescens, Pieris japonica and various alpines. Messrs. Maxwell and Beale made a small rockery and displayed dwarf Heaths and Primulas. Well-flowered bushes of Viburnum Carlesii, various Saxifrages, Primulas and Aubrietias were staged by Messrs. M. Prichard and Son.

A well-arranged rock garden was shown by Messrs. W. Cutbush and Son, who planted masses of Azalea mollis and other shrubs at the back. Amongst the rock plants were vivid flowers of Tulipa praestans, Tubergen's variety, Primula denticulata and Muscari. Messrs. W. H. Rogers and Son showed Skimmia Roger's purpurea, Convolvulus Cneorum, Blue Primroses and Saxifrages. At the end of one of the tables, Messrs. Tucker, Ltd., displayed Saxifraga Sundermannii, S. rocheliana lutea and Morisia hypogea.

Messrs. Waterer, Sons and Crisp had an attractive rock garden exhibit, in which they planted Anemone fulgens annulata of glowing colour, Tulipa Eichleri, T. praestans, Tubergen's variety, Narcissus corbularia and dwarf alpines. In their exhibit, Messrs. J. Cheal and Sons showed several good varieties of Aubrietia, Primroses and dwarf shrubs.

An interesting exhibit from Mr. F. J. Wood included well-placed batches of Anemone fulgens, Anemone St. Buro, of very pretty colours, dwarf Irises and Primulas in variety. Messrs. Cashburn and Welch displayed Saxifraga Arco-Valleyi, Anemone vernalis and Primula Wanda. Various Primulas, Arabis and Daphne Cneorum were shown in a low rock garden by Messrs. Pulham and Son. In his rock garden, Mr. Clarence Elliott placed generous breadths of Saxifraga Griesbachii, Wisley variety, S. oppositifolia latina, Primula pubescens, P. viscosa hybrids and, in the background, planted dwarf Pinuses.

Several shapely Japanese Maples and other shrubs were associated with Grape Hyacinths, Primulas and other alpines by Messrs. Bakers, Ltd. Mr. Gavin Jones staged Raoulia australis, Saxifrages, Primulas and Tulips. The Misses Hopkins had an interesting little rock garden. Azaleas in variety, Brooms and other shrubs, were shown with Primulas and general alpines by the Central Gardens Supplies Co. Messrs. Hodgsons, Ltd., had Azalea mollis, Primula denticulata, Narcissus Bulbocodium, Iris candida Nova and flowering shrubs. Messrs. D. Stewart and Son had a small rock garden exhibit.

Narcissus and Tulip Committee.

Present: Mr. E. A. Bowles (in the chair), Mr. G. Monro, Mr. G. W. Leak, Sir Daniel Hall, Mr. P. D. Williams, Mr. P. R. Barr, Mr. J. D. Pearson, Mr. W. B. Cranfield, Mr. G. Wilson, Miss E. Willmott, Mr. W. Slinger, Mr. C. W. Needham, Mr. C. H. Curtis, Mr. H. Smith, Mr. W. F. M. Copeland, Mr. F. A. Secrett, Mr. A. W. White, and Mr. W. Poupart, Mrs. Brodie, and Mr. A. Simmonds, Secretary.

AWARDS OF MERIT.

Narcissus Goviley.—A very beautiful bicolor Barrii variety with large, waved, pure-white perianth and a small, yellow-centred, rich reddish orange, flattened and frilled cup. The blooms displayed were of fine texture and were held erect on firm, slender stems. Shown by Mr. P. D. Williams, Lanarth, St. Keverne.

Narcissus Trewirgie.—A Cyclamineus hybrid of large dimensions, with broad, slightly recurved segments and a long, rich golden trumpet with a recurved margin. This extremely handsome variety was also shown by Mr. P. D. Williams.

GROUPS.

Narcissi were a prominent feature at this meeting, and there were numerous fine exhibits, which included several devoted almost entirely to new seedlings.

The Donard Nursery Co. displayed a fine bank of blooms in very fine condition. Among the Trumpet Narcissi were good specimens of Golden Harvest, Sir Horace Plunkett, Gog, Irish Pearl, Bridal Morn and numerous unnamed seedlings, while of the Incomparabilis section there were fine representations of Macebearer.

The exhibit arranged by Mr. F. A. Secrett consisted of many magnificent seedlings, of which the large-trumpeted varieties were much in evidence. One seedling that made special appeal, but which was, unfortunately, unnamed, had a pale cream perianth with a trumpet of a delicate shade of apricot; of named varieties there were fine blooms of Medusa, Bernadino, White Nile, and Sunrise. Next to this group was another bank of blooms, arranged by Mr. J. W. Barr, the most striking varieties being King's Pirate, Torfrida, the richly-shaded Triton, Red Beacon and Mountain Pride.

A choice collection of new Daffodils was shown by Mr. G. L. Wilson; this included many exceptionally fine flowers of white trumpeted varieties. Of these, Beersheba, an enormous, daintily-frilled Daffodil of a beautiful creamy-white, was outstanding, while the fine-shaped Tenedos, Eskimo, White Emperor and White Nile, all of similar colouring; Lemon Max, and King of the North, both golden, were also noticeable.

Mr. J. L. Richardson staged a really magnificent group, most prominent in which were Killigrew, with rich yellow segments and a vivid deep orange cup; St. Just, with pale cream perianth and a golden-yellow, orange-edged cup; Alroi, a golden-trumpeted variety, and Damson, whose cup was of the richest shade of orange. There were fine blooms of the beautifully shaded Suda; Grackle, a richly coloured Incomparabilis that is claimed to stand well in the open garden; and Glorious, which, as displayed, was indeed glorious Croesus, Loyalist, Orange Glow, Scarlet Gem and Medusa were also well shown in this exhibit.

The attractively arranged group of numerous Narcissi, staged by Messrs. Barr and Sons, was undoubtedly one of the features of the show. In this exhibit special features were made of Alice Knights, a dainty, rich cream, Trumpet variety; Fiery Monarch, the golden Bonaparte, Hera and Anteros. The beautiful Gold Sand was extremely well shown, as also were Tresserve, Golden Herald, Brian, and Alasnam; John Evelyn, a distinct variety with a spreading, closely-frilled cup; and the beautiful cream-coloured Prince Umbria.

Messrs. J. R. Pearson arranged an attractive group that included the huge-trumpeted Van Waveren's Giant and Tresserve; while such varieties as Princess Miriam, Jean Ingelow, Sunrise, Zillah, in exceptional condition, the fine bicolor-trumpet Vestan, Elfrida Pearson, and Ideal, assisted in the creation of a really fine effect.

Included in the collection staged by Messrs. D. Stewart and Son were the dainty N. Poetaz, Horace, Peter, the double-flowered Cheerfulness, and Primrose Phoenix; there were also good specimens of Agnes Harvey, the richly-coloured Flame, Red Beacon, and the bicolor-trumpet Weardale Perfection.

Messrs. J. Carter and Co. arranged an attractive group, in which baskets of well-flowered specimens of the orange-yellow Lachenalia Nelsoni, and the fine, pink-flowered Prunus triloba, showed to advantage large masses of Narcissus King Alfred, and smaller groups of Macebearer, Flame, Empire, Homer, Spring Beauty and Sulphur Beauty.

Among the seedlings displayed by Mr. W. F. M. Copeland were fine vases of Irene Copeland, a pale cream, double-flowered Narcissus and the brilliant Oranges and Lemons; together with several other named forms.

A striking mixed group, embracing Tulips, Narcissi, Primroses, Chionodoxa Luciliae and its variety sardensis, and Irises Everdingen, White Excelsior and Heemskerk, was staged by Messrs. R. H. Bath, Ltd. Of Tulips there were fine specimen blooms of Bartigon, Clara Butt, Inglescombe Yellow, the richly-coloured T. Gesneriana lutea, Margaret, and Scarlet Perfection, while the blooms of Narcissus Golden Sunrise, King Alfred, Advance Guard and Double Sir Watkins were of fine quality.

Fruit and Vegetable Committee.

Present: Mr. C. G. A. Nix (in the chair), Mr. W. Poupart, Mr. H. S. Rivers Mr. P. C. M. Veitch, Mr. G. F. Tinley, Mr. A. C. Smith, Mr. A. Bullock, Mr. J. Basham, Mr. J. Wilson, Mr. E. Beckett, Mr. A. W. Metcalfe, Mr. H. Markham, Mr. R. H. Hall, Mr. H. A. Prince, Mr. A. Poupart, Mr. T. Pateman, Mr. E. Laxton, Mr. W. H. Divers, Mr. T. Bostock, Mr. E. A. Bunyard and Mr. A. N. Rawes (Secretary).

No business of importance was dealt with by this Committee. Specimens of English-grown Newtown Pippin and Rome Beauty, two popular American Apples, were submitted by Messrs. R. Veitch and Son, but were considered to be inferior in flavour to seasonable English varieties.

GUILDFORD ROSE.

On the occasion of the visit of Mr. Courtney Page, Honorary Secretary to the N.R.S., who was announced to lecture on "The Making of a Rose," on Wednesday, the 7th inst., the largest hall in the town had been secured, and this was crowded to its utmost capacity, and some late comers had to be turned away.

Mr. Page's lecture was somewhat technical, but displayed a wide and deep knowledge of his subject. He touched upon the history of many species of Roses, and explained the origin of many popular varieties of to-day, and referred to a mystery Rose, discovered in an American garden last century. This Rose has leaves like a Willow and a bloom resembling an Orchid. It had never been, and could not be, propagated!

The lecture was illustrated by lantern slides, many of them beautifully coloured. These had been specially prepared under the direction of Mr. Page, and were shown publicly for the first time at this meeting.

After the lecture more than two hundred people remained to watch a demonstration of pruning Roses.

A vote of thanks was proposed by the Mayor of Guildford, Mr. W. R. Philpot. The President of the Society, Mr. William Harvey (a member of the N.R.S. Council), in a brief address, spoke of the continued growth of the Society and the wide interest taken in it. The membership now stands at 315, and it is hoped that 500 will be reached by the date of the next Rose show in June. The value of the trophies put up for the show last September was thirty guineas, but for this year the prize fund already amounts to two hundred guineas. The new Society has certainly taken a strong hold upon Guildford, and shows every promise of a successful future.

BIRMINGHAM AND MIDLAND COUNTIES GARDENERS'.

At the fortnightly meeting held on March 5, a lecture was given by Mr. Caldebank, of Hall Green, on "The Cultivation of Hardy Fruits." The lecturer stated that from observations made over a long period, there was a deplorable lack of knowledge with regard to the choosing of sites for fruit trees and also in regard to pruning. He advocated a medium soil and high positions for all fruit trees, protection from cold winds, and, if grass land, double digging and allowing the ground to be fallow for at least one year. The lecturer dealt with all forms of trained trees and the distances to plant; and also discussed recent researches regarding the best stocks to use. He demonstrated his ideas on pruning and also advocated "ringing" to promote fruitfulness in Apples and Pears. All kinds of small fruits were dealt with in the course of the lecture, and selections of varieties given.

There was a very interesting discussion and a vote of thanks was accorded Mr. Caldebank for his lecture.

WESTERN COMMERCIAL HORTICULTURAL.

The two-days' show, organised by the Western Commercial Horticultural Growers, was held at St. John's Hall, Penzance, on March 8 and 9.

Naturally, the chief feature was the display of spring flowers; there were wonderful masses of Narcissi, Tulips, Anemones, Violets and spring-flowering shrubs, which were viewed by a record attendance of visitors. The display of Violets, which is usually an important feature of this show, was not so large as usual, but the blooms were of good quality, especially those of Princess of Wales.

The recent mild weather was responsible for the wonderful array and wide range of Narcissi that were the feature of the exhibition.

One of the most important awards given at this show—the Cup for the best cultivated bulb plantation—was won by Messrs. G. Waters, while there was keen competition in the section for the best-packed boxes of blooms.

The three prizes for the best-packed boxes of Narcissi were awarded to Mrs. Wallis, Colonel C. H. Paynter and Messrs. J. Jeffery, respectively; and Mrs. Wallis also secured the first prize in the travelling test for boxes of blooms packed before noon on the day previous to the opening of the show.

There were many splendid blooms displayed in the class for vases of Narcissus King Alfred, the first prize winners being Messrs. Jeffery with Mr. R. Tregonning second; while the quality of the blooms of the other varieties of Narcissi, in their various classes, was exceptionally high.

The best group of Violets was arranged by the Michaelstowe Valley Nurseries, and other fine exhibits were staged by Mr. D. Grant Dalton, Miss L. Jeffery and Lieut.-Col. E. H. W. Bolitho.

In the vegetable section the most popular feature was the Roscoff variety of Broccoli, every exhibitor of Broccoli showing this variety.

READING GARDENERS.'

On Friday evening, March 16, seventy members sat down to supper in the Abbey Hall, kindly lent by Messrs. Sutton and Sons, under the chairmanship of the President, Mr. Frank E. Moring. After supper, a smoking concert took place and a very enjoyable evening was spent.

During the proceedings, the Chairman of Committee, Mr. H. Reeves, gave the toast of "Our President," and in a few well-chosen words referred to the great interest and assistance the President had rendered to all branches of the Association's work, and went on to ask Mr. Moring's acceptance of a Jacobean Oak bureau from the members as a token of their gratitude.

The fortnightly meeting was held in the same Hall, on March 19, when about one hundred members were present, presided over by Mr. H. Reeves. Unfortunately, the original lecturer was unable to be present, but Mr. E. J. Dore kindly filled the breach and gave a most interesting and opportune lantern lecture on "Annual Flowers for Cutting."

In his opening remarks the lecturer referred to the immense demand for cut flowers, and suggested that hardy annuals were within the reach of everyone who had a garden, for they could be grown successfully in most soils, and would flower where they were sown; judicious thinning was one of the secrets of success, while a point in their favour was their lasting qualities in water. Among the many sorts recommended were Larkspurs, Godetias, Clarkias, Lavateras, Mignonette, Sweet Sultans, annual Chrysanthemums and Nasturtiums.

An interesting discussion followed which was sustained by several members, and the thanks of those present were tendered to Mr. Dore for his most interesting and valuable discourse.

In the non-competitive section a First Class Certificate was awarded to Mr. W. Broomfield for a beautiful specimen of Cypripedium villosum, while a fine specimen of Amaryllis was shown by Mr. C. S. Clacy.

FLORAL EXHIBITION AT ANTIBES.

The exhibition held on March 15 to 19 was a complete success, although the area available was insufficient for the large number of exponants. It was held in the Place de la Victoire and the adjoining theatre, where all the cut flowers were staged. Amongst the various exhibitors of Carnations, M. Andre Bonfils, Nice, had far away the finest display, both for artistic arrangement and high quality. It comprised about fifty vases, the largest of which contained about one hundred flowers. Some of the finest varieties were Almondo, Papa Bonfils, Louis Grimello, Manon, Tresor, Madame Flaminia Raiberti and Lindbergh. Several promising seedlings were shown, including Madame Seilagman, orange-crimson, exceptionally large and full.

Orchids were well represented by a group from Mr. Clafford, The Grand Jardin Golfe-Juan (gr. Mr. E. Cleverley), in which we noted Cattleya Zephyr, Brasso-Cattleya amabilis, B.-C. Cyclops, Cattleya Jupiter, C. Empress Frederick, Laelio-Cattleya Sladdeni, Dendrobium Phalaenopsis and Phalaenopsis Rimstadiana.

A collective group contributed by many exhibitors occupied the whole centre of the theatre and represented the floral produce of the neighbourhood, amongst which were noted a basket of Freesia George Davison, shown by Mr. F. W. Smith, gardener to G. Davison, Esq., Château des Enfants, to which the Jury unanimously awarded a Silver Medal and Diploma as a new plant. The colour on opening is straw yellow, fading to rich apricot; the flowers are exceptionally large and open.

From the gardens of the Casino, Monte Carlo, came a fine group of stove plants, including good specimens of Pandanus, Neottia Nidus-avis, Codiaeums, Marantas, etc. Messrs. Vilmorin-Andrieux et Cie staged a very effective group from their seed grounds at Cap d'Antibes, comprising many of their novelties in Cinerarias, Cyclamens, Primulas, Nemesias, etc.

From the Botanic Garden at the Villa Thuret, came a very interesting group of Cacti and other Succulent plants representative of the numerous varieties that may be cultivated in Riviera gardens. Landscape gardening was well represented by Mr. Louis Favre and Mr. Dental, the latter staging a raised garden with crazy-pavement, very effectively planted, the trellis work and seats harmonising with the surroundings.

Many other smaller exhibits from various firms contained their different specialities and showed skilful culture. Messrs. Moraglia et Guibaudo, Freres showed a new Carnation named Moraglia, rich pink, very finely veined with red, very large and full.

The staging, grouping and general arrangement reflected great credit on all concerned.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

At the meeting held on Friday, March 23, the members of Committee present were Messrs. J. B. Adamson (in the chair), H. Astley Bell, A. Burns, A. Coningsby, J. Evans, A. Keeling, D. McLeod, W. J. Morgan and H. Arthur (Secretary). Mr. J. Keeling was invited to sit with the Committee.

Awards of Merit.

Brasso-Cattleya Fama (*C. Lawrenceana* × *B.-C. Veitchii*); *Dendrobium plumptonense var. Ian, and D. Timsbury Gem var. Curlew.* From Mrs. Bruce and Miss Wrigley.

Cypripedium Mrs. James Clark (*Gowerianum Gratrixiae* × *Maudiae*). From J. H. Clark, Esq.

Cultural Certificates.

To Mr. A. Burns, for Lycaste Balliae, and to Mr. J. Howes, for Dendrobium Wardianum.

Groups.

J. B. Adamson, Esq., Blackpool (gr. Mr. J. Howes), was awarded a Gold Medal for a group of Odontoglossums in variety, including O. Doreen, O. Jasper, O. L'Aiglon, O. Thwaitesiae, O. Whiterock and O. crispum White Queen; Odontioda Borda, O. Bonar Law; Platyclinis glumacea, Dendrobium infundibulum, D. Cooksonii and D. Wardianum.

Mr. John Evans, Colwyn Bay, was awarded a Silver-Gilt Medal for a group containing Cymbidium Pauwelsii, C. Erica and C. Alexanderi; Odontoglossum Princess Yolande, O. marginatum, and O. percultum; Odontioda Vuylstekeae; Dendrobium Merlin, D. Renown and D. Lady Colman; Miltonia Bleuana and B. Hyeana.

Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. A. Burns), gained a Silver Medal for a group containing Lycaste Skinneri var. Robin, L. S. Goliath, L. S. Purple Emperor and L. S. Cazador, L. Balliae and L. Hagha; Dendrobium nobile nobilius, D. n. Berkeley's var., D. Cybele alba, D. chessingtonense, D. Rolfeae and Brasso-Cattleya Fama.

Messrs. Keeling and Sons, Bradford, staged Cypripedium Astarte, C. Lady Carlyle and C. Faith Hanbury, with Odontoglossums and Dendrobiums.

J. H. Clark, Esq., Andenshaw, exhibited Cypripedium Mrs. James Clark.

ROYAL CALEDONIAN HORTICULTURAL.

At the meeting of this Society, over which Mr. J. T. Jeffrey, the President, presided, Mr. W. Robb, of Corstorphine, gave a lecture on "Heredity and Environment."

He spoke of heredity as concerned with the transmission of potentialities from the parent to the offspring, and stated that characters that may be seen in mature plants are not necessarily inherited—it is the capacity to develop these characteristics, in a suitable environment, that is inherited, therefore heredity and environment are equally as important in the development of plants.

Mr. Robb advised self-fertilisation as a preliminary means of ascertaining the hereditary propensities of different plants to be used in the breeding of new and improved varieties, so that parental strains of known hereditary constitution may be obtained.

At this meeting an exhibit of Tulips and Narcissi was staged by Messrs. William Thomson and Co., and was awarded a Silver Medal.

The competition for one pot-grown Cyclamen resulted in the first prize being awarded to Mr. D. EGGO, and the second prize to Mr. W. M'DOWELL; for one pot of early-flowering Tulips Mr. NEIL LEYDEN was awarded first prize, and Mr. A. C. BEATSON the second.

SALISBURY AND DISTRICT GARDENERS.'

ON Monday last, members of this Society paid a visit to the Romsey Gardeners' Society, accompanying Mr. W. H. Edmonds, who gave a very interesting and instructive lecture on "Bees and Interpollenation." The Salisbury party were met at the Oddfellows Hall, by the Rev. D. F. Wright and Mr. G. F. Frampton, members of the Romsey Society.

The Rev. D. F. Wright occupied the chair, and on behalf of the Romsey Society, accorded the Salisbury gardeners a very hearty welcome, and introduced the lecturer, Mr. Edmonds, who held the attention of his audience in what proved to be a very delightful talk on Bees.

At the close of the lecture a keen discussion took place, numerous questions being put and answered. A hearty vote of thanks was accorded the lecturer, who suitably responded.

Refreshments were kindly provided for the Salisbury Society, and Mr. W. F. Gullick, in tendering the thanks of the Salisbury Gardeners, referred to the spirit of good will that existed amongst gardeners and gardeners' societies, and he hoped that at no distant date the members of the Romsey Society would give them the opportunity of reciprocating. Mr. S. W. Tucker endorsed Mr. Gullick's remarks. The Rev. D. F. Wright observed that he hoped the meeting was only the first of many such, and that the spirit of reciprocity would remain so long as the Salisbury and Romsey Societies existed.

THE fortnightly meeting of the Salisbury Gardeners' Society took place at the White Hart Hotel; Mr. S. W. Tucker occupied the chair and the evening was devoted to questions.

Previous to the discussion, the Committee deputed to deal with Wild Flowers, reported that the first exhibit of Wild Flowers would be on view at the Public Free Library, on Friday evening, March 23, at 6 p.m., when a member would be in attendance to answer any questions respecting the plants exhibited, and to name any specimens brought forward.

Following this announcement, questions covering a wide area were put forward and answered; fruits, rock plants, seed Potatos, Geraniums and bedding plants all being dealt with.

A vote of thanks to the Chairman for presiding was proposed by Mr. A. E. Davis and seconded by Mr. Taylor.

At the final meeting for this season the ecturer will be Mr. J. Townshend, of Chard, whose subject will be "Dahlias."

PROFESSIONAL GARDENERS'.

Mr. R. GREENFIELD, Leamington Spa, addressed one of the largest gatherings of gardeners ever held before in Yorkshire, on March 21, at the Victoria Hotel, Leeds. His subject was the Past, Present and Future of Gardeners. Mr. Greenfield touched upon the autocratic manner of head gardeners of the past who, no doubt, had great advantage in showing results because of their peculiar knowledge and the fact that they could obtain really good assistants at a very low wage. To-day the gardener has fewer assistants, and in many cases, less experienced hands to help him. Mr. Greenfield considered the future propects were excellent, and he recommended the young man to take advantage of education and study, pointing out that municipalities and district councils were adding to their parks and playing fields. Lecturers were also in great demand by nearly all councils and other governing bodies.

Mr. Greenfield referred at length to the work done by gardeners who were left at home during the war, and he considered that their work in production was never properly recognised. Mr. Greenfield also criticised the wireless broadcasting of gardening information, and contended that only practical experts should be engaged for this purpose.

Obituary.

George A. Knight.—We learn from a Canadian correspondent that Mr. George Abiah Knight, of Mount Tolmie Nurseries, and latterly of Victoria, B.C., died on February 27. Mr. Knight was born at Petersfield, Hampshire, seventy-seven years ago, and went to Canada in 1868, after having served as gardener at the Crystal Palace. He established a nursery at Mount Tolmie, and became well-known throughout the province of British Columbia. Many of the older trees in Victoria were raised by him, and he discovered the natural hybrid between Ribes Lobbii and R. divaricatum, which was described in the *Journal* of the Arnold Arboretum in April, 1923, as R. Knightii.

Harold Morris.—We very deeply regret to have to record the death of Mr. Harold George Morris, one of the seniors in the firm of Messrs. Protheroe and Morris, 67 and 68, Cheapside, London, which occurred suddenly, at sea, on Wednesday, March 21. Mr. Morris was returning from South America having voyaged there for the benefit of his health after a prolonged stay in Switzerland, and was due to arrive at Plymouth on Sunday. Born at Leytonstone sixty-three years ago, he was the eldest son of the late Mr. George Field Morris, who was for many years head of the firm, and followed the late Mr. W. H. Protheroe in conducting the Orchid sales with which the firm were entrusted, and had dispersed under the hammer many well-known private collections. He was at one time on the Orchid Committee of the Royal Horticultural Society. In addition to this, he was well-known in the rostrum at Cheapside in connection with the sales of the large importations of Japanese Lilies which are consigned to the firm every year. He became a partner in the firm in 1889, with Sir James Slade and the late Mr. T. A. Morris. Mr. Harold Morris leaves a widow and two sons, one of whom, the well-known Essex County cricketer, is in the business, and the present members represent the fourth generation of the Morris family, together with Mr. A. E. Protheroe (the third generation), and Sir James Slade, the firm having been established in 1830.

Franz Deegen.—We regret to learn from the German horticultural press, of the death, on March 5, in his eighty-eighth year, of Herrn Franz Deegen, a well-known German Rose-grower, and former proprietor of the Köstritz Nurseries. He had lately retired from business, having himself founded the nurseries in which he spent so many laborious years. The son of Christian Deegen, one of the oldest and most successful raisers of Dahlias, he was himself engaged for some time in the same pursuit, but later specialised in Roses and obtained a high reputation as a raiser and grower.

Julius Huhle.—The death has occurred in Dresden, at the age of sixty-two, of Herrn Julius Huhle, head gardener of the beautiful Dresden Park, known as the "Grosse Garten." Huhle was born near Dresden, and much of his training he received in that city, famed for its lovely open spaces and for its horticultural traditions. He entered the Grosse Garten as assistant gardener in 1890, and gradually worked his way upwards to the distinguished position he held at the time of his death, which took place on March 2.

ANSWERS TO CORRESPONDENTS.

CHRYSANTHEMUM WHITE FAVOURITE.—*C. M.* We are unable to state why Chrysanthemum White Favourite should come more or less pink, unless it is taken on the wrong bud, as this has a distinct influence on the colour of some varieties. Other late white-flowered varieties are Heston White, Percy A. Dove, Mons. J. Valet and Madame R. Oberthur, some of which might prove suitable for your purpose.

COELOGYNE CRISTATA.—*L. T.* The correct name of this Orchid is as given. The species is quite easily cultivated in an intermediate house or at the warm end of a cool house. Pans are the best receptacles to use, and the potting material should consist of peat and loam fibre with some crushed crocks added. Good drainage is essential, and the plants require large supplies of water when well rooted and growing freely. The best time to repot is so soon as the young growths are commencing to make new roots.

DIANTHUS OF CRIMSON COLOUR.—*Cherry.* As Dianthus Napoleon III does not succeed with you we recommend Dianthus Crimson Bedder or D. hybridus var. floribundus. The former has crimson-scarlet flowers, and blooms from May until August and September; it grows from twelve inches to eighteen inches tall. The second one named may probably answer more nearly your description of a cherry-red, but it is really a good rose shade, and has the perfume of a Pink. D. Crimson Bedder is by far a better plant, and a good bedding or border sort.

HYACINTH BULBS FAILING.—*J. P.* The trouble is probably due to the bulbs not being thoroughly ripened.

NAMES OF PLANTS.—*R. G.* 1, dark red: Rhododendron (Azalea) amoena var. splendens; 2, light pink: R. Hinomayo, which is one of the Kurume (Japanese) Azaleas. The name "Hexe" to which you refer is another Kurume variety.

ORANGE TREES.—*C. L.* Orange trees should receive water at the roots when they require it, the same as any other plants; they will not require so much water during the winter months as in summer, but they must not be kept too dry or they may lose their leaves. If you have raised the plants from seeds or pips, and the fact that they have thorns indicates that this is so—many years may elapse before they flower and produce fruits; and it is impossible to say how soon seedling Oranges may produce fruits. They may be induced to fruit earlier by grafting them, but seedlings vary greatly, and it is just pure chance whether the fruits will be of any value.

ROSES DISEASED.—*A. A. W.* Your plants are suffering from one of several Rose cankers which have been described, but as the fungus was not fruiting on the specimens we cannot identify it. All such cankered shoots should be cut out and burnt.

SPENCER NECTARINE.—*J. R. M.* This variety produces a large, handsome fruit suitable for exhibition when well-grown, and of good flavour. Growth is inclined to be vigorous but unless the roots are kept under control and careful cultivation is given, it does not bear freely. It is not too late now to check root action. Remove some of the soil, and fill in with a more porous compost containing plenty of old lime-rubble and make the whole all firm. Fertilise the flowers from a small-flowered variety, as such generally contain more pollen; and feed the tree roots only when a full crop of fruits is carried. This treatment should have the desired effect, and you will find that firm, short, well-ripened wood will set fruits freely enough.

Communications Received.—P. R.—T. P.—A. G.—L. S.—K. M. H.—W. D.—R. U. H. B.—J. K. B.—P. and M.—H. M. C.—R. E. A.—C. P.—E. W.—H. S.

MARKETS.

COVENT GARDEN, Tuesday, March 27th, 1928.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Tuesday by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market and the demand and they may fluctuate, not only from day to day, but occasionally several times in the day.—Eds.

Plants in Pots, etc.: Average Wholesale Prices.

(All 48's except where otherwise stated).

	s. d. s. d.
Acacia Drummondi, 48's, per doz. ...	18 0-24 0
Adiantum cuneatum, per doz. ...	12 0-15 0
—elegans ...	12 0-15 0
Aralia Sieboldii	9 0-10 0
Araucarias, per doz.... ...	30 0-40 0
Asparagus plumosus ...	12 0-18 0
—Sprengeri ...	12 0-18 0
Aspidistra, green	16 0-60 0
Asplenium, doz.	12 0-18 0
—32's	24 0-30 0
—nidus ...	12 0-15 0
Azaleas, various, 48's, 32's, per doz.	30 0-48 0
— — 60's, per doz.... ...	15 0-21 0
Boronia megastigma, 48's, per doz.... ...	18 0-24 0
Cacti, per tray, 12's, 15's ...	5 0—7 0
Cinerarias ...	15 0-18 0
Crotons, doz. ...	30 0-45 0
Crytomiums ...	10 0-25 0
Cyclamens, 48's, per doz. ...	15 0-21 0
Daffodils, 48's, per doz. ...	9 0-12 0
Erica melanthera, 48's, per doz.	27 0-30 0
Genistas, 48's, per doz. ...	15 0-18 0
Hyacinths, 3's, per doz. ...	18 0-21 0
—60's, per doz.	8 0—9 0
Marguerites, 48's, per doz. ...	18 0-21 0
Nephrolepis in variety ...	12 0-18 0
—32's	24 0-36 0
Palms, Kentia	30 0-48 0
—60's	15 0-18 0
Primula malacoides ...	8 0-10 0
Pteris in variety	10 0-15 0
—large, 60's ...	5 0—6 0
—small ...	4 0—5 0
—72's, per tray of 15's ...	2 6—3 0
Spiraea, white, 48's, per doz.	18 0-21 0
—pink, per doz.	21 0-24 0

Cut Flowers, etc.: Average Wholesale Prices.

	s. d. s. d.
Adiantum decorum, doz. bun.	15 0-18 0
—cuneatum, per doz. bun. ...	10 0-12 0
Anemones, St. Brigid, per doz. bun. ...	4 0—5 0
Arums (Richardia), per doz. blooms ...	6 0—8 0
Asparagus plumosus, per bun. long trails ...	2 6—3 6
—med. sprays	2 0—2 6
short „ ...	— 1 0
—Sprengeri, bun. long sprays...	2 0—2 6
med. „ ...	1 0—1 6
short „ ...	0 6—1 9
Azalea, white, per doz. bun.	6 0—7 0
Camellias, 12's or 18's, per box	3 0—3 6
Carnations, per doz. blooms	2 6—4 6
Croton leaves, per doz. ...	1 9—2 6
Daffodils, per doz. bun.—	
—Emperor ...	3 0—5 0
—Princeps ...	2 0—2 6
—Sir Watkin ...	2 6—3 0
—King Alfred .	10 0-12 0
—Victoria ...	4 0—5 0
—Barrii conspicuus ...	3 0—3 6
—Empress ...	3 6—4 0
Fern, French, per doz. bun.	10 0-12 0
Forget-me-not, per doz. bun.	8 0-10 0
Freesia, white, ordinary ...	2 6—3 6
Heather, white, per doz. bun.	— 12 0
Hyacinths, large white, per doz. spikes ...	3 0—4 0
Iris, per doz. blooms—	
—blue	3 0—4 0
—white ...	3 0—3 6
—yellow ..	2 6—3 0
—mauve ...	2 0—2 6
Lilac, white, per doz. sprays...	6 0—9 0
—mauve, per doz. spikes ...	6 0—9 0
Lilium longiflorum, long, per bun.	3 0—4 0
— — short, doz. blooms ...	3 6—4 0
Lily-of-the-Valley, per doz. bun.	24 0-30 0
Marigolds, per doz. bun. ...	3 0—4 0
Myrtle, green, per doz. bun.	1 6—2 6
Narcissus Ornatus, per doz. bun.	3 0—6 0
—Soleil d'Or, per doz. bun. ...	4 0—5 0
—Grand Primo, per doz. bun.	2 6—3 6
—Elvira, per doz. bun. ...	5 0—6 0
—Flame, per doz. bun.... ...	7 0—8 0
—Koster, per doz. bun. ...	5 0—6 0
—Poetaz, per doz. bun. ...	5 0—6 0
—choice varieties	8 0-10 0
Orchids, per doz.	
—Cattleyas ...	21 0-30 0
—Cypripediums	8 0-10 0
Primroses, per doz. bun. ...	1 6—2 0
Roses, per doz. blooms—	
—Butterfly ...	5 0—7 0
—Columbia ...	5 0—6 0
—Golden Ophelia	4 0—5 0
—Richmond ...	3 6—6 0
—Aaron Ward	4 0—5 0
—Roselandia...	4 0—6 0
—Hoosier Beauty	5 0—6 0
Smilax, per doz. trails ...	5 0—6 0
Tulips, per doz. bun.—	
— single, white	24 0-30 0
— — red ...	15 0-18 0
— — pink ...	18 0-24 0
— — mauve ...	18 0-24 0
—double varieties	18 0-24 0
—Darwins, pink	18 0-24 0
— — red ...	18 0-24 0
— — yellow ...	27 0-30 0
Violets, per doz. bun.... ...	2 0—4 0
Wallflowers, per doz. bun. ...	4 6—8 0
French flowers—	
—Allium (Star), per doz. bun.	2 6—3 0
—Anemone, De Caen, doz. bun.	5 0—6 0
— — blue, per doz. bun. ...	2 6—3 0
— — double pink, per doz. bun.... ...	2 6—3 0
—Marigolds, per doz. bun. ...	4 0—4 6
—Stock, double white, per doz. bun.	4 0—4 6
—Violets, Parma, double, per bun.... ...	2 6—3 0
— — single, doz. bun.... ...	2 6—4 0

Remarks.—Throughout the cut flower department supplies have been much heavier, and requirements good generally. Daffodils are now arriving in large quantities from all districts. Prices for Darwin Tulips are somewhat easier, which is due, no doubt, to the excellent condition of the blooms, and large quantities have been moved, especially on Friday and Saturday last. Spanish Irises are increasing almost daily, and include some fine blooms of white, mauve and yellow sorts. Sweet Peas are also more abundant, but these are still of medium quality. Roses are considerably more plentiful, and prices are again on the down grade. Single Violets have been less plentiful and poorer in quality. Large quantities of flowers will be required for the great festival which takes place in Wales during this week-end. These will consist largely of Arums (Richardias), Lilium longiflorum, Carnations, Roses, Star Alliums, white Stocks and various kinds of foliage. No doubt pot plants will receive much attention during the next few days for the Easter trade, and large quantities will be sent to the provinces during the present week.

Vegetables: Average Wholesale Prices.

	s. d. s. d.
Asparagus,	
—Lauris ...	4 0—8 0
—Giant ...	20 0-25 0
—Sprue ...	1 6—2 0
—Cavaillon ...	3 6—4 0
Beans, Madeira, per box ...	6 0-10 0
—Guernsey, finest, per lb.	2 0—3 0
—Worthing ...	2 0—3 0
Beets	5 0—6 0
Cauliflowers, French, per crate ...	8 0-12 0
—Cornish ...	10 0-15 0
Celery (washed), per doz. fans	1 6—2 0
Cucumbers, doz.	3 0—6 0
Endive, French	3 6—5 0
Leeks, per doz.	2 0—2 6
Lettuce, English	1 6—2 0
—French, round, per doz. ...	3 0—5 0
Mint, forced, per doz. bun.	4 0—7 6
Mushrooms—	
—Cups ...	2 0—3 0
—Broilers ...	1 6—1 9
Onions—	
—Dutch ...	14 0-16 0
—Spanish ...	18 0-22 0
Parsnips, cwt.	5 0—6 0
Potatos—	
—English, cwt.	7 0-10 0
—Guernsey, new, per lb. ...	0 6—0 8
—Azores, new	15 0-20 0
—Canary ...	14 0-16 0
Tomatos, Canary Islands ...	15 0-20 0
Turnips, per cwt.	6 0—7 0

Fruit: Average Wholesale Prices.

	s. d. s. d.
Apples, English—	
—Newton Wonder	6 0-12 0
—Lane's ...	6 0-12 0
—Bramley's Seedling ...	6 0-12 0
Apples—	
—Newtowns ...	12 6-16 0
—Winesaps ...	12 0-14 0
Apples, New Zealand—	
—Cox's ...	27 6-30 0
—Worcesters ...	27 6-30 0
—Gravensteins	27 6-30 0
—London Pippin	27 6-30 0
—Alfristons ...	27 6-30 0
Apples—Nova Scotian—	
—Ben Davis ...	17 0-20 0
—Nonpareil ...	18 0-27 0
—Stark ...	18 0-24 0
Bananas ...	14 0-23 0
Grape Fruit—	
—Blue Goose...	— 35 0
—Jamaica ...	— 30 0
Lemons, Messina and Palermo, per case ...	14 0-25 0
—boxes ...	11 0-15 0
Oranges, per case—	
—Valencia and Denia, per case	18 0-35 0
—Almeria ...	20 0-32 6
—Jaffa ...	18 0-21 0
Strawberries, per lb.	15 0-30 0
South African Fruits—	
Grapes—	
—Waltham X .	10 0-15 0
—Colmar ...	10 0-13 6
—Rosaki ...	10 0-13 0
—White Hannepoot ...	10 0-15 0
—Red Hannepoot... ...	8 0-15 0
Peaches, tray...	— 10 0
Pears—	
—Beurré Hardy	5 0—9 0
—Beurré Bosc	4 0—7 0
—Beurré Superfin	4 0—8 0
—Bourré Diel...	8 6—6 0
—Doyenné du Comice, per doz.	5 0—8 0
—Louise Bonne	4 0—7 0
Pineapples, per case	14 0-23 0
Plums—	
—Kelsey ...	5 0-10 0

Remarks.—Business continues active in most departments and is encouraged by fine weather conditions. The recent arrivals of Grapes, Pears and Plums from South Africa have been heavy. The demand for these fruits has been good, and in most instances prices are good. The first shipment of the season of New Zealand Apples has arrived and, with stocks of other imported Apples comparatively low, there has been a fair enquiry for the New Zealand produce. A few more hot-house Strawberries are now arriving and are offered at lower prices, although quotations are still high. English Bramley's Seedling Apples are selling freely at prices which are considered satisfactory by the producers.

Cucumbers have come in rather rapidly, and at the moment prices are rather low. Dutch Cucumbers are mainly responsible for the set back of the price level. A few English Tomatos, both from the Lea Valley and Worthing districts, are available, also some from Guernsey, and all are realising high prices. Hothouse Beans are more plentiful, but prices are firmer; Madeira Beans are quoted at lower rates than ruled for last week's shipment. Forced Peas are in demand even at high prices, while new Potatos from Guernsey and Jersey are cheaper in face of the competition from the Canary Islands, Azores, Algeria, France and Spain. French Asparagus is scarcer and making higher prices, while Mushrooms remain at a steady level.

Forced Rhubarb is feeling the increasing quantities of "natural" that are now available, and prices are lower. Cauliflowers (Broccoli) continue firm, as do green vegetables generally. Potatos are in good demand and prices have improved. All salads are on the short side and costly.

GLASGOW.

As a result of the mild weather, large quantities of blooms, that were past their best, arrived in the market on Tuesday, and had to be disposed of at whatever prices the buyers cared to offer; otherwise the tone was steadier and Tulips recovered a little from the recent low level of values: Bartigon, Le Notre, Louisante and Princess Elizabeth were worth 8d. to 10d. for 6's; Lucretia and William Copland, 6d. to 8d.; and Prince of Austria and Murillo, 5d. to 7d. Daffodils were plentiful and cheap, Sir Watkin, Golden Spur and Princeps making 2d. to 6d. per bunch of 12; King Alfred, 10d. to 1s.; Ornatus, 5d. to 7d.; and Primo, 1½d. to 2½d. Irises ranged from 3s. 3d. to 4s. per dozen. J. C. Mensing and Madame Butterfly Roses, 5s. to 8s.; red and white Roses, 4s.; white Chrysanthemums, 2s. 6d. to 3s. 6d.; and Arums (Richardias), 4s. to 5s. Despite the large consignments of Carnations from the south, prices kept steady at 2s. 6d. to 3s. 6d. for ordinary blooms, and 4s. for special blooms. Lilium longiflorum fluctuated between 3s. 6d. and 4s. per bunch; Lily-of-the-Valley, 2s. 6d. to 3s.; Anemones, 3d. to 4d. and English Violets, 6d. to 9d. Wallflower plants sold at 1s. 6d. per dozen.

The fruit market continued quiet and featureless. Apple supplies were confined to a few sorts, Newtown Pippins being quoted at 16s. to 19s. per case; Winesaps, 13s. to 17s.; Albemarle Pippins, 45s. to 60s. per barrel, and Ben Davis, No. 1, 24s. Jaffa Oranges sold at 18s. to 21s. per dozen. Porto Rico Grape Fruits, 28s. for 96 and 112 counts; Californian Grape Fruits, 30s. to 32s.; and Palermo Lemons, 14s. per box. South African fruits were in moderate demand at the following prices:—Pears: Beurré Hardy, 4s. to 6s.; double layers, 8s. 6d.; Doyenné du Comice, 5s. 6d. to 8s.; double layers, 10s.; Bonne Louise, 3s. 6d. to 5s.; double layers, 6s. 6d. to 7s. 6d.; Beurré Bosc, 4s. to 6s.; double layers, 6s. to 8s.; Bon Chretien, 3s. 6d. to 4s. 6d.; double layers, 5s. to 7s. 6d. Prices for Grapes were: for Waltham Cross, 12s. to 15s.; Rosaki, 13s. to 15s.; White Hannepoot, 10s. 6d. to 13s.; Red Hannepoot, 10s. to 12s.; and for Kelsey Plums, 4s. 6d. to 7s.; double layers, 8s. to 9s. 6d.

In the vegetable section, Cucumbers obtained 6s. to 9s. per dozen; Cauliflowers, 7s. to 8s.; Lettuce, 2s. 6d. to 5s.; Carrots and Turnips, 1s. to 1s. 3d. per bunch; Salads, 2s. 6d. per dozen; Mushrooms, 2s. per lb.; Rhubarb, 40s. per cwt.; and Teneriffe Potatos, 24s. per case.

SCHEDULES RECEIVED.

National Dahlia Society.—Annual Exhibition, to be held on Wednesday, September 12, at the Royal Horticultural Hall, Westminster.—Secretary, Mr. W. J. Chittenden, 2, Dents Road, Wandsworth Common, S.W.11.

Wolverhampton Floral Fete.—Thirty-sixth show to be held on Tuesday, Wednesday and Thursday, July 3, 4 and 5.—Secretary, Mr. W. J. Maxfield, Town Hall, Wolverhampton.

Dundee Horticultural Society.—Exhibition to be held on Magdalen Green, on Thursday, Friday and Saturday, September 6, 7 and 8; Chrysanthemum Exhibition, to be held in the Drill Hall, on Friday and Saturday, November 23 and 24.—Secretary, Mr. J. M. Martin, 53, West Port, Dundee.

CATALOGUES RECEIVED.

A. W. Thorpe, South View, Birmingham Road, Lichfield, Staffordshire.—Chrysanthemums.

Corry and Co., Ltd., Shad Thames, S.E.1.—Sundries.

A. Shanks and Son, Dens Iron Works, Arbroath.—Lawn mowers.

GARDENING APPOINTMENT.

Mr. H. Penfold, for the past eight years Gardener to R. Basil Hoare, Esq., at Greenhill House, Sutton Verney, Warminster, Wiltshire, and previously for four years Gardener to S. A. Peto, Esq., Downs Court, Sandwich, Kent, as Gardener at the Westonbirt Gardens, Tetbury, Gloucestershire. (Thanks for 2/6 for R.G.O.F. Box.—Eds.)

THE
Gardeners' Chronicle

No. 2154.—*SATURDAY, APRIL* 7, 1928.

CONTENTS.

Alpine garden—
  Androsace foliosa ... 246
  Arenaria norvegica 246
  Oxalis enneaphylla 246
  Veronica Lyallii ... 246
Belgian export tax removed 241
Books, notices of—
  A Guide to Kew ... 242
  Botanical Magazine 242
  Carnation Year Book 242
Bulb garden—
  Tulipa praestans ... 247
Characters and testimonials 250
Chrysanthemum midge 241
Cultural memoranda—
  Greenhouse Rhododendrons 253
Flower garden—
  Early-flowering Chrysanthemums ... 247
Foundling Hospital site 242
Frosts, effects of sudden severe, on March 13 250
Fruit garden—
  Origin of Commercial Apples ... 254
" Gardeners' Chronicle" seventy-five years ago 243
Gardeners' Library, A 241
Garden manures for April 253
Hardy flower border—
  Astrantia minor ... 247
  Iris gracilipes ... 246
Imperial War Graves 242
Indoor plants—
  Aphelandra squarrosa 246
  Marantas and Calatheas 246
Lime or chalk... ... 254
Mesembryanthemum . 251
Nursery note—
  Messrs. L. R. Russell, Ltd. 254
Obituary—
  Merchant, Wm. ... 255
Paper White Narcissi in America 241
Plants, raising, from collected or rare seeds 248
Primroses and lime ... 248
Primula, the genus ... 252
Rose garden—
  Rosa lutea Harissoni 247
Slug, the garden ... 253
Societies—
  Glasgow Spring Show 255
Spae, M. FranSois ... 242
Strawberry disease ... 243
Sulphur 252
Vegetable garden—
  Skirrets 254
  Sorrel 254
Week's work, the ... 244

ILLUSTRATIONS.

Azalea indica Charme de Noel 245
Cymbidium Rosanna var. Magnolia 247
Narcissus Trewirgie 243
Rosa lutea Harissoni 251
Spae, M. FranSois, portrait of 242
Sulphur: flowers of, 252; special dusting 252
Veronica Lyallii 249

SUPPLEMENT PLATE.
Lupins at Kew.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 46.1°

ACTUAL TEMPERATURE.—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London, Tuesday, April 3, 10 a.m. Bar. 29.9. Temp. 50°. Weather, Raining.

A Gardeners' Library.

In this respect, at least, the library is like unto the garden—often it does not owe its being to any initial set design, but rather it grows, while, with both the garden and the library, the ideal would be to set out with a definite plan, to be completed as circumstances and means permit. Again, with both garden and library, no two would be, or scarcely could be, alike. Each will represent to a considerable extent the desires, requirements and fancies of its possessor. Therefore, just as there can be no " One Hundred Best Books," which the late Victorian intellectuals so loved to enumerate, and with such illuminating diversity, so can there be no ideal library, or bookshelf, for the gardener. But it is always interesting to speculate on what might be the choice of the average man in his books. That books are essential few would seriously deny, although we remember an amateur who took his gardening and self seriously, stating, at a certain committee meeting—as though claiming a virtue—that he did not find any need for gardening books or periodicals! Such prescience is, we need scarcely say, exceptional. Most gardeners are often glad to turn to their books, which they consider as dear and valued friends. The books on whose choice we speculate are what may be termed professional ones, works which are or should be, essential and helpful to the young gardener; for it is the young man just starting on his professional career that we have in mind. Of necessity his books will be limited in number and size, for, although he could acquire them, the journeyman gardener, who is somewhat a bird of passage, could not well transport numerous or large books. It is later in life, when he " settles down," that he will, if so minded, collect books and it is of interest to recall that nearly all our best gardeners have also been great book-lovers. We think we may fairly limit our hypothetical young man, during his novitiate, to six books, excluding his Bible and English Dictionary, bearing in mind that they must be of moderate size. The subjects to be covered in this miniature library are, we suggest, Botany, Chemistry, Hardy Trees and Shrubs and Fruits and Vegetables. To these five must be added a Gardening Dictionary and, for this, we can think of none more suitable than *Johnson's Gardener's Dictionary*. Later in life he could well add *Nicholson's Encyclopedia of Gardening*, with its Century Supplement, and now sadly in need of another volume (or total revision) to bring it up-to-date; *Thompson's Gardeners' Assistant*, or *Bailey's Standard Cyclopedia of Horticulture*. Sufficient elementary Botany could be studied in Edmund's *Elementary Botany*, while Cousins' *Chemistry of the Garden* is an invaluable little book, a veritable storehouse of knowledge of great value to all gardeners, within its limits of size and price. *Fruit and its Cultivation*, by T. W. Sanders, is probably the best modest-sized general book on the subject. With vegetables, the choice of a book presents greater difficulties. The recent edition of *Vegetables for Home and Exhibition*, by E. Beckett, stands alone as being the best and most complete handbook on the subject, but we fear its price may be considered prohibitive by the young gardener. If such be the case, he should search the secondhand booksellers' catalogues for the two volumes in " Present Day Gardening " series, or apply himself to *The Culture of Vegetables and Flowers*, by Messrs. Sutton and Sons. Trees and Shrubs also present a difficulty on account of the price of *Trees and Shrubs Hardy in the British Isles*, by W. J. Bean, a book which, we feel, all will agree as being the most desirable on these subjects. An alternative is *Trees and Shrubs for Amateurs*, by the same authority. It will be noted that these suggestions include no work on General Horticulture, Stove and Greenhouse Plants, Orchids, the Rock Garden or Insect Pests and Plant Diseases. On account of the limitations we have imposed, these omissions are unavoidable and, we suggest, are not quite so important as, at first sight, they seem. The principles and practice of horticulture are incorporated in the books we have enumerated; as also, in, perhaps, a lesser degree, but sufficiently so for the young beginner, are the other special subjects. Our aim is rather to suggest the lines on which the young gardener could commence the more complete garden library which, we hope, he will form as he advances in his profession.

Our Supplement Plate.—The garden varieties of Lupinus polyphyllus are now very numerous. There are many excellent strains of these useful flowers and many named sorts, and the colour range is a wide one. The value of these Lupins for the hardy flower border has long been recognised, but only in recent years have they been used in bold masses or large beds, either in public or private gardens. Our Supplement Plate shows a large bed of Lupinus polyphyllus in the Royal Botanic Gardens, Kew.

Chrysanthemum Midge.—The Board of Agriculture for Scotland intimates that with a view to guarding against the introduction into Scotland of the Chrysanthemum midge which has recently appeared in England through the agency, it is believed, of Chrysanthemum cuttings imported from abroad, in future all consignments of unrooted cuttings and rooted plants imported from abroad will require to be accompanied by the certificate of health prescribed by the Amendment Order of the Destructive Insects and Pests (Scotland) Order of 1922, which came into operation on March 15, 1928.

A Curious Yam.—A tuber of Dioscorea alata, shaped like a horse-collar, was exhibited at the recent meeting of the Linnean Society by Mr. J. H. Burkill; this curious specimen was sent to Kew by Mrs. D. Collins, of Sirach, Siam. It is not abnormal, but one of the numerous cultivated races of this Yam, a race found from the Philippine Islands westward to Siam and the Malay Peninsula. Mr. Burkill stated that primitive man, painfully aware of the labour of digging for his food the tubers of the ancestral D. alata, from three feet down, when he started to cultivate or to care for them, selected for shortness, and so in time provided himself with rounded and variously-branched tubers of new races. But the elongated deep-burying Yams remained the more tender and desirable. Rumpf tells how, in the island of Buton, a device had been arrived at for growing these deep-burying Yams through horizontal Bamboos placed close to the surface of the soil, that when wanted they might be lifted easily. In recurving Yams, such as the one exhibited, nature has given man another means of saving his labour. When a set of one of them is planted, the new tuber starts its growth downwards, recurves in the soil, and, unless earthed up, extrudes. When it extrudes, its growth is liable to be stopped; but if earthed repeatedly it may be got to grow the season out, the positive geotropism with which it started having turned into a negative geotropism. Secondary tubers arising by the side of the first, and, of course, later, possess negative geotropism from the beginning, and grow upwards. This geotropic change seems worthy of investigation, and, as a race is to be cultivated at Kew, there will be an opportunity for anyone interested to investigate it. Such recurving Yams cannot survive as wild plants; wild pigs would not allow them to do so. They certainly took their origin under cultivation.

Paper White Narcissi in America.—The culture, in America, of the Paper White Narcissus as a marketable flower has rapidly increased during recent years, and we learn that large tracts of land are devoted to it annually, especially in Texas. American bulb forcers received a serious set-back when the embargo was placed on Narcissus bulbs, but this is now being overcome by the home-production of good bulbs suitable for forcing, and huge quantities of this Narcissus, and also of several other popular market varieties, are being successfully produced.

Belgian Export Tax Removed.—Great rejoicing has been occasioned in Belgian Grape-growing circles by the removal, as from February 14, by royal decree, of the two per cent. export tax on Grapes and Witloof Chicory which had hitherto been imposed. It is difficult to see any justification for such a tax, which weighed very heavily on the Grape-growers and Chicory producers, especially as it was added to the so-called " transmission tax," also of two per cent. The greater part of the Grapes and Chicory grown in Belgium are for export, and the tax was in the nature of a discouragement to growers. It is still in being, so far as other products are concerned, for instance, on Tomatos, of which large quantities are raised in Belgium and exported.

Vine-growing in Central Germany.—The vineyards of Central Germany were not so productive last year as usual, owing to the unusually severe and trying weather conditions. The abnormally early development of the growths sustained a long check during the cold weather which occurred in May and June, and further damage was caused, as it frequently is in that climate, by the burning of the leaves, which occurs in consequence even of quite mild spraying for the prevention of insect pests, especially when resistance has been already undermined by unfavourable conditions. The quality of the wine, however, left nothing to be desired, and good prices were obtained.

Tewkesbury Flower Show.—Tewkesbury and District Spring Flower Exhibition will be held in the Town Hall, Tewkesbury, on Thursday, April 19. A Challenge Bowl is offered for the best collection of twenty-four varieties of Narcissi, and other special prizes are offered in the various sections, which include numerous classes for Narcissi, one for specimen plants of subjects other than Narcissi, and one for collections of vegetables. The Schedule of Prizes may be obtained from Mr. A. Baker, Junr., The Gables, Tewkesbury.

Carnation Year Book.—The *Carnation Year Book* for 1928, published by the British Carnation Society, should prove of interest to all who are interested in the culture of this popular flower. The prize-winning essays on "My Favourite Carnations—and why?" provide interesting reading; the selection of varieties in the best essay is, in order of merit, given as:—White Pearl, Cottage Maid, Saffron, Eldora, Shot Silk and Nero. The essay by Mr. G. Sackville-West, a Carnation grower in South Africa, affords an insight into the cultural methods employed in that country; while the history of the Carnation, books on Carnations, and the modern Carnation, are dealt with in turn by competent authorities. A portion of this publication is, of course, devoted to the affairs of the British Carnation Society.

Legacies to Gardeners.—The late Mrs. Sarah Smithson, of Hitchin, who died on January 7, bequeathed £150 to her gardener, Mr. A. T. Bradnick, and £20 to his wife.—The late Mr. Edwin Pope, of Mentone Lodge, Dorchester, who died on January 27, left 10s. a week for life to his former gardener, Mr. T. Solman.

Imperial War Graves.—The eighth annual report of the Imperial War Graves Commission shows that the work of this body is rapidly approaching completion. The Horticultural Department has, we learn, been responsible for the planting of sixty-three miles of hedges; the sowing of five-hundred-and-thirty-nine acres of grass; and of supplying many millions of plants, flowering trees and shrubs, a large proportion of which has been raised in the Commission's own nurseries.

Horticultural Exhibition at Würzburg.—The Municipality of Würzburg, Germany, has decided to arrange a horticultural exhibition in 1929. The idea is to make it mainly an open air exhibition, which will act as a stimulus to the development of gardening on modern lines, inside the "park-ring" of the town. The site of the exhibition is to be the ground near the Court of Justice so far as the racecourse, known as the "Kleine Nizza"; it affords space enough to form, when partly enclosed, a good position for a modern flower garden. Independently of this project, the Frankish Horticultural Society had planned two large shows to take place in 1929, and approached the Municipality for pecuniary assistance, which, however, in view of their own projected exhibition, will not be forthcoming.

Foundling Hospital Site.—We learn that a scheme is in preparation for the acquisition of the Foundling Hospital Site in Bloomsbury, London, for the purpose of erecting thereon a new hospital in place of the present children's hospital in Great Ormond Street, and the preservation of the remainder of the site of nearly four acres as a public garden and open space. A provisional committee has been appointed and has held its first meeting under the chairmanship of Mr. Philip Morrell. A draft scheme, including the erection of a new children's hospital at a cost of £200,000, has been approved, and negotiations are now proceeding with a view to fixing the purchase price of the site.

M. François Spae.—A quiet and unassuming gentleman, M. Francois Spae may not appear to be a very important personality at the forthcoming International Exhibition at Ghent, and yet the success of this great function will be due very largely to his initiative and to the persistence with which he has followed up every suggestion and development. He is President of the Organising Committee of the Ghent Show and therefore an immense responsibility has rested upon him. This responsibility he has shouldered in his usual modest, but resolute fashion, and consequently he has earned the gratitude of all concerned. M. Spae entered the nursery business with his father, who founded the establishment at Melle-lez-Gand in 1872, but most of the ground originally occupied is now covered with private dwelling houses, and more land has been acquired in the outer part of Melle, a suburb of Ghent. Here M. Spae makes special features of Palms, Bay trees, Azaleas, Bromeliads and ornamental stove plants in his hectare of glasshouses M. Spae has been associated with most of the great continental horticultural events during the past forty years, and won honours at the Ghent shows of 1893, 1898, 1903 and 1913; and at the Heemstede Show in 1925, where he obtained the Grand Prix d'Honneur. M. Spae will be a busy man during the Floralies Gantoises, as he is also Secretary of the Belgian section of the Conference of the Fédération Horticole Professionnelle Internationale.

M. FRANÇOIS SPAE.

A Guide to Kew.—A new guide to the Royal Botanic Gardens, Kew, is now available. It includes a plan of the Gardens, and commences with a brief history of the establishment, followed by a statement of the functions of Kew. The various separate botanic gardens are dealt with in turn, as also are the glasshouses, the museums and the arboretum. The matter contained has been thoroughly revised and brought up-to-date, and the new arrangement is such that no confusion should arise from its use, while much useful data that is included should prove invaluable to all students of horticulture.

The Botanical Magazine.—Part 3, of Vol. 152 of *The Botanical Magazine* has just been published, and in it thirteen plants are portrayed and described. Watsonia Beatricis (t. 9,139), described by Mrs. Bolus as the most beautiful of all the Watsonias, has vivid apricot-red blooms. It is a native of Cape Colony, and has for several years been grown at the Botanic Garden at Kirstenbosch, where it blooms in January and February, and always excites considerable admiration. The excellent illustration of this species was prepared from a specimen which flowered at the Wembley Exhibition in 1925, early in September. Actinidia coriacea (t. 9,140), a native of China, is a handsome, brightly-coloured climbing dioecious shrub, with glabrous, reddish or reddish-brown branches, and fragrant, red, solitary or clustered blooms. The figure was drawn from a specimen growing in Mr. G. W. E. Loder's garden at Wakehurst Place, Ardingly, where it apparently flowers profusely during June. Halimium umbellatum (t. 9,141), from south-west Europe, is closely related to the Helianthemums—it is described as "one of the daintiest and most floriferous rockroses." It has been grown in this country for many years, but its cultivation has never become general, and it has been described under a large number of names. It may be considered hardy in ordinary winters, but like most of the Cistaceae, it is liable to damage in severe weather unless afforded protection. Halimium umbellatum is a small, much-branched evergreen shrub; the young branches are more or less downy, clothed with estipulate, usually glossy and glabrous, dark green leaves, while the small, white flowers are produced freely in terminal clusters of three or five. Clematis macropetala (t. 9,142), from Chinese Mongolia and Amur, was described in Vol. LXXI of *The Gardeners' Chronicle*, p. 111. Its introduction dates back to the middle of the eighteenth century, since which period a large number of collectors have sent seeds of it to this country, from China; the illustration was prepared from a specimen growing in the Hon. Vicary Gibbs' garden at Aldenham that was raised from seeds collected by the late Mr. Reginald Farrer. It is a climbing or trailing shrub, with bi-ternate leaves on slender petioles, the segments being ovate to lanceolate, acuminate, and usually with coarsely dentated margins. The solitary, pendulous flowers are produced on slender, slightly hairy pedicels; they consist of four azure-blue to purple-blue sepals, and a large central cluster of petals of variable shape, the outer ones resembling the sepals, but narrower and paler, the inner ones much shorter and still paler. Trollius yunnanensis (t. 9,143), is apparently quite common in the alpine meadows of north-western Yunnan, flourishing in moist, loamy soil, and associated with Primula Viallii, various species of Pedicularis, Anemone rupestris, and the blue-flowered Strobilanthes versicolor. Like the well-known Trollius europaeus, it varies in the size of the flower and the division of the leaf-blades, while a double form, with large, flat leaves, was collected by Mr. G. Forrest on several occasions near Likiang. A key, in which the characters and differentiations of the several distinct members of the Yunnanensis and Pumilus series of Trollius, is appended to the description of the type plant. Phlomis Bovei (t. 9,144), takes us to northern Africa, where it was discovered by Desfontaines in the hills near Blidah, since when it has been collected repeatedly. A plant raised at Kew from seeds received in December of 1922, flowered when about eighteen months old, and under the lee side of the Temperate House had, at the time of being described, so far proved hardy, although we do not know what effect the severe weather of the past winter had on it. It is described as a perennial herb, with stout, densely tomentose, quadrangular stems; very large, cordate-ovate, dark green basal leaves and smaller cauline leaves; and with a verticillate inflorescence, the whorls consisting of up to six pale rose, or white flushed with rose, blooms. Primula bellata (9,145a), is a diminutive species from China that was introduced by Messrs. Bees, Ltd., in 1908, and has been found to be rather averse to cultivation; in its native habitat it is found in moist, peaty or turfy and stony pastures, associated with mosses, often forming large mats and producing numerous blooms which vary in colour from light to deep rose-purple or purplish-blue. This Primula was described in *The Gardeners' Chronicle* in 1885, Vol. XXIV, p. 712. Raoulia subsericea (t. 9,145b) a dwarf, prostrate herb that forms dense, carpet-like patches, with innumerable small, white, composite flowers, flourishes on the rock garden at Kew. It is stated to be quite hardy, although a native of New Zealand, and is best treated as a moraine plant. Schizandra rubriflora (t. 9,146), is an attractive climbing plant from China, with twining, cord-like branches, and from beneath the leaves it produces quaint, red, pendulous flowers, which are followed by spikes of rich claret-red berries. Rhododendron semibarbatum (t. 9,147) is a deciduous species from Japan, with a habit of growth peculiar in Rhododendrons. When the leaves have fallen, clusters of up to eight broad, spindle-shaped buds are found clustered at the tips of the growths; of these, the terminal bud grows into a shoot, clothed at first with a few small, lanceolate leaves, and ending with a cluster of normal, oblong-elliptic ones. The lateral buds may, in most instances, give rise to short shoots, terminated by solitary, short-stalked flowers that are white, flushed with pink and spotted with red around the throat. Fritillaria acmopetala (t. 9,148) became known in 1846; it is a native of Asia Minor, and was described in *The Gardeners' Chronicle* so long ago as 1875. The name F. acmopetala was wrongly applied to a plant previously figured in the *Botanical Magazine* (t. 6,321). It flourishes in the open garden at Kew in light soil, where it flowers freely each year and requires no special treatment. Primula involucrata Wardii (t. 9,149), is the Chinese form of the Himalayan P. involucrata, and is in commerce in this country. It is perfectly hardy, and produces its fragrant flowers, which vary in colour from pale mauve to pale pink or purple, rarely white, in great profusion; it is a lover of moist, open ground, and may be propagated either by division or from seeds. Trias picta (t. 9,150), is a member of a small Indian genus of Orchids. It forms long creeping rhizomes, on which are formed chains or clusters of one-leaved pseudo-bulbs, from the bases of which the single, short-stalked, reddish-purple flowers, sometimes partly dotted with red on a paler ground, are produced.

The Strawberry Disease.—The Fourth *Annual Report* of the Department of Plant Pathology of Seale-Hayne Agricultural College, contains an account of the facts so far obtained by investigators of this serious trouble. The causes leading to the diseased appearance of Strawberry plants appear to be many, and the symptoms are grouped into six arbitrary divisions:—(1) Miffy plants; (2) Small Leaf; (3) Cauliflower; (4) Red Plant; (5) Leaf Curl; and (6) Patch. Miffy plants are small, with small leaves on disproportionately long leaf-stalks; the whole plant presents a spindly appearance. The cause of this condition is given as injury to the roots or crown, and the injury may weaken the plants so much that they never recover. On the other hand, runners displaying these features often recover and form normal plants. If weather conditions permit, planting in August is advocated. Strawberry plants with Small Leaf have numerous, dense crowns, and yellowish-green, small leaves on short, thick stalks. This type was produced by water-logging the soil, and is presumably due to bad drainage. The term Cauliflower is applied to those with fasciated crowns; a type common in many gardens, that may be removed by roguing. Red Plant is characterised by the presence of small, distorted leaves on long or reduced leaf-stalks; they are usually, but not always, red or purplish. The plants may be large and of healthy appearance, but the flower and fruit yield is always reduced, while the runners also develop the disease. Roguing in May and June, when the symptoms are most apparent, is preferable to being done in September or March, when the disease is hardly visible. Leaf Curl is described as applying to plants with leaves puckered at the edges and somewhat crinkled and distorted, and yellowish in colour. The size of the plant is reduced, the crowns are weak, numerous and dense, and the crop may be reduced considerably. Investigations at Long Ashton Research Station point to the Strawberry aphis (Capitophorus fragariae) as the cause of the trouble, and it is suggested that runners should be dipped in a nicotine solution—half-an-ounce of ninety-eight per cent. nicotine in ten gallons of water, with sufficient soft soap to produce a lather to ensure the thorough wetting of the leaves—before planting; diseased plants should be burned and the rest sprayed. The Patch disease is distinguished by the death of the roots and crowns, and is apparently the most serious. The disease usually occurs in well-defined patches, but isolated plants with symptoms of this disease may often be found; the patches may be due to poorness of the soil not directly responsible for the disease. The growing of a good strain, vigorous and properly rogued; planting so early as possible when weather conditions permit; dipping and spraying the runners with a nicotine and soft soap solution; and rotation of crops, are practical recommendations which may assist Strawberry growers in combating the trouble.

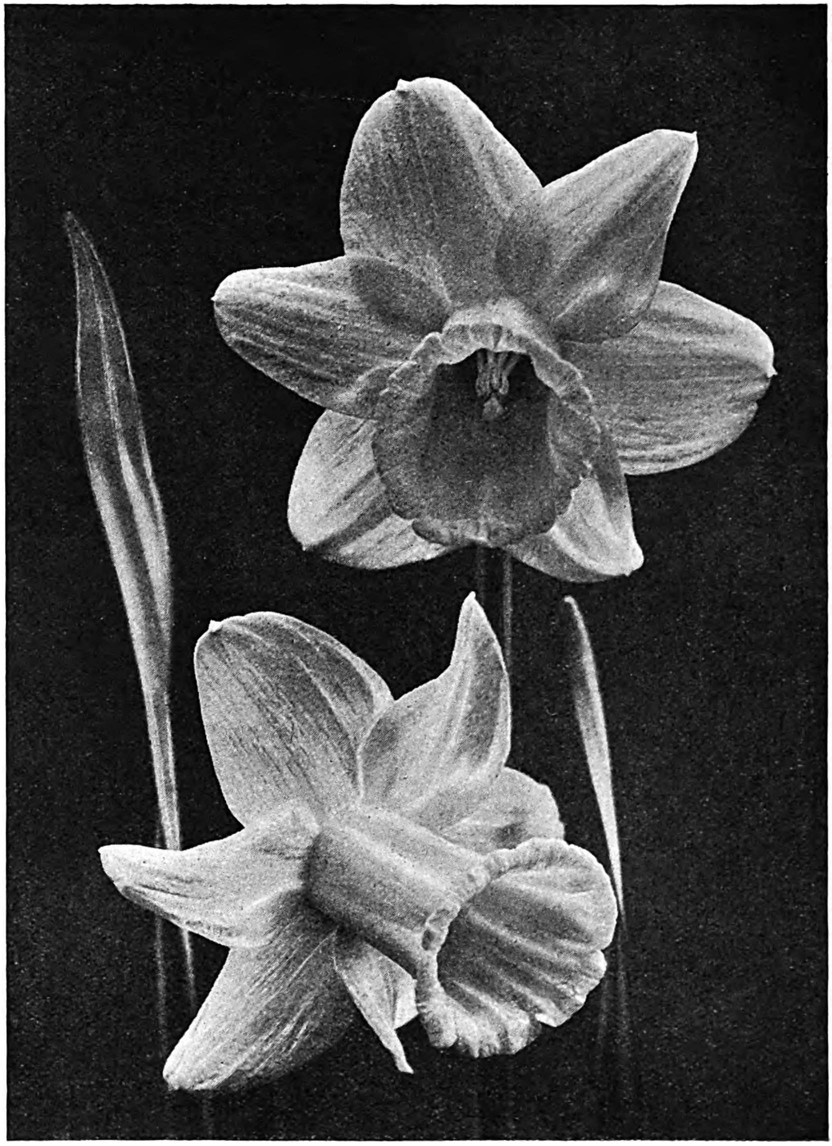

FIG. 119.—NARCISSUS TREWIRGIE.

R.H.S. Award of Merit, March 27. Flowers golden-yellow; a N. cyclamineus hybrid.
Shown by Mr. P. D. Williams (see p. 237).

Appointments for the Ensuing Week.—Wednesday, April 11: Royal Horticultural Society's Committees meet (two days); Brighton, Hove and Sussex Horticultural Society's show (two days); Royal Horticultural Society of Ireland Spring Show (two days); Sheffield Chrysanthemum Society's meeting. Thursday, April 12: Brentford and Chiswick Horticultural Society's Spring Show; Huntingdonshire Spring Flower Show. Friday, April 13: Manchester and North of England Orchid Society's meeting.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Effects of the Winter near Dublin.*—Strong healthy plants of Cupressus Goveniana and C. lusitanica have been killed; C. elegans is much injured; C. funebris growing near them, and rather more exposed, is quite safe, although its leader continued growing up to the end of September, while Taxodium sempervirens and Escallonia macrantha, within a few yards of it, are much hurt. The beautiful Ceanothus divaricatus against a trellis, and on a good aspect, has had its breast-wood all "cut off," while C. dentatus and C. rigidus, more exposed than the former, have escaped. The shoots of Lonicera flexuosa, Weigela rosea, Escallonia rubra, Jasminum revolutum, and even those of the common Ivy upon the walls, all afford evidence of the severity of the past winter. Out of a dozen valuable Pinuses, P. radiata is the only one that has suffered. The beautiful Holly-leaved Cherry, Cerasus illicifolia, and Berberis aquifolium, have been slightly injured. On the mornings of the 21st and 22nd of March we had a very sharp frost. Our Peaches on the open walls were then in bloom; a piece of thin canvas, however, suspended from the coping, has prevented the blooms from being injured. *D. Pressly, Gardener to G. Burns, Esq., Knockmaroon, March 29. Gard. Chron., April, 2, 1853.*

Publication Received.—*More Aristocrats of the Garden,* by E. H. Wilson; The Stratford Co., 234, Boylston Street, Boston, Mass.; price $5.00.

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven Moore, Manchester.

Coelogynes.—Different species of this genus may be had in flower during the greater part of the year, and C. cristata and its varieties, also C. sparsa, have been making a grand display of flowers just recently. After the flowering period, any necessary attention may be given in providing fresh rooting material. These Orchids flower much better when root-bound, and unless the plants have overgrown their receptacles, root disturbance is not advisable. Top-dressing may be done by first removing any sour compost and old, decayed bulbs and roots, and working in fresh compost, consisting of equal parts Osmunda fibre, fibrous loam and Sphagnum-moss, amongst the sound roots. Where specimen plants require replanting, several leads should be evenly arranged in the receptacle, three bulbs behind each lead being sufficient to retain. Secure the bulbs in position with wire pegs until the roots are well established in the compost, and grow them in a shady position in the intermediate house; encourage root action so much as possible by spraying the surroundings and plants on favourable occasions. Very little water is needed at the roots until the plants are rooting and growing freely. Other species of Coelogyne which require similar growing conditions are C. barbata, C. graminifolia, C. Massangeana, C. speciosa and C. corrugata, and these may receive attention at the roots after flowering, when the young growths are advancing and are about to produce new roots. Coelogyne Mayeriana should be fastened to a narrow raft or block, and grown in a warm house, together with C. pandurata, C. Lawrenceana, C. asperata, C. Sanderiana and C. Rossiana, in shaded and moist surroundings. C. Dayana and C. Massangeana are best grown in baskets or pans suspended from the roof, to allow their pendant racemes to show naturally. Coelogynes require ample moisture in the atmosphere and at the roots when in full growth, but care should be taken not to allow moisture to collect in the young growths, for they damp off quickly.

Weather Effects.—The spell of severe weather experienced over most parts of the country, and the consequent increase in the fire-heat required to maintain the minimum temperatures, necessitate an increased amount of damping down to counteract the dryness in the atmosphere. Ventilation should be applied with discretion and cold draughts avoided during the bright intervals of sunshine; tender foliage is soon injured, especially when ventilation cannot be safely given. It is better to lower the blinds, if only for a short period. A keen search should be made for thrips, which increase rapidly under these conditions, and means should be taken to keep them in check by fumigating on quiet evenings and spraying with an approved insecticide on fine, clear days.

THE KITCHEN GARDEN.

By Allan Falconer, Gardener to the Cheadle Royal Mental Hospital, Cheadle, Cheshire.

Beetroots.—A small sowing may be made on a warm border of the Globe, or Egyptian variety for early use, but the sowing of the main-crop is best deferred until the end of the month or early in May. Seeds to produce exhibition roots may be sown now; if a skeleton frame can be provided and filled with suitable soil, better results will be obtained. Holes bored to a depth of three feet and one foot apart, should be filled with a mixture of old potting soil, mushroom-bed manure, woodash and lime-rubble that has been passed through a quarter-inch sieve; sow three or four seeds in each hole, and dust the beds with wood-ash, lime and soot, as a deterrent against slugs and birds. Slight protection is necessary in the colder districts to young Beet seedlings sown so early, for there is a risk of them bolting if they are checked by frost, and for the summer shows it is necessary to sow early.

Dwarf Beans.—Plants that are now swelling their fruits should be kept well syringed against red spider and will require a moist atmosphere; give occasional, but not excessive, applications of liquid manure, for it has a tendency to make the pods too green. Seeds may now be sown in 60's, two in a pot, to produce seedlings for planting out in frames on hot-beds, when they are about six inches high. Plant them singly, ten inches apart and fifteen inches between the rows, in a good depth of soil similar to that used for growing them in pots. If the soil is placed on the hot-bed some time previous to planting, it will be warmed and ready for receiving the plants, which will require special attention until well established.

Broad Beans and Peas.—These, having been hardened off, will now be ready to plant out in the open, and I know of nothing better as a guard against slugs and birds than Sanitas powder; on badly infested ground, I have resorted to dusting some powder in the holes before the plants are put in, afterwards dusting the tops, and the results have been satisfactory. Slugs work under the surface of the soil during cool weather, and do a lot of damage to young, tender crops, and I have proved that this powder discourages them, and being quite harmless to the plants, and pleasant to use, I can recommend it. It is not desirable to purchase Sanitas powder by buying it in tins, which are too dear, but any quantity above 28 lbs. becomes cheap to use, and no harm can be done to the most tender plants by its use.

PLANTS UNDER GLASS.

By J. Coutts, Assistant Curator, Royal Gardens, Kew.

Loropetalum chinense.—This charming plant, which has been in flower for several weeks in the cool greenhouse, seems to have almost disappeared from general cultivation. It produces its creamy white flowers in wonderful profusion, and excellent flowering plants may be produced in six-inch pots. It is easily propagated at this season by means of cuttings that root readily under a bell-glass in a cool house. As it is inclined to be of a spreading habit, a leading shoot should be kept tied to a central stake; it thrives in any good potting compost, and is nearly hardy, merely requiring the shelter of an unheated greenhouse or cold frame during the summer months.

Tecoma alata (syn. T. Smithii).—Propagation of this subject by means of cuttings of the young lateral shoots, which root readily in a close case, with slight bottom-heat, may now be accomplished. The young plants may be grown without stopping, for if confined to a single stem, one strong inflorescence is produced, although they may, if so desired, be grown in bush form, by pinching the shoots, or growing the plants on for a second year. During the summer months they should be plunged out-of-doors in an open sunny position, giving strict attention to watering, as they are subject to attacks of red spider. When the inflorescence appears, the lateral shoots, which are certain to appear below it, may be removed, for if they are allowed to develop to any extent, the flower buds will be suppressed, and will drop off.

Jacobinia chrysostephana.—Producing lovely golden-yellow flowers, this winter-flowering species is the most beautiful of all the Jacobinias, and is undoubtedly the most difficult of them to grow successfully. Internodal cuttings may be rooted at this time in a warm propagating case; for this purpose, growths with two shoots may be inserted. The advantage of securing cuttings of this description lies in the fact that this plant is only seen at its best when the shoots are allowed to grow unchecked. They should be grown steadily until they are in six-inch pots, in which they may be flowered; during the growing period they should never be allowed to become pot-bound, or growth will be seriously checked. When the flower-buds are developing, constant attention to keep them free of mealy bug is essential, and they are also subject to attacks of Begonia mite. This subject requires an average temperature of 60°.

Lindenbergia grandiflora.—Bearing its pale yellow flowers at the same time, this subject makes a good companion plant to Peristophe speciosa. It may be propagated now by cuttings of the young shoots from the base of the plants, or from root cuttings. It is almost hardy and requires perfectly cool treatment at all times, the best results being obtained by not stopping the growths; it grows freely in any good potting compost.

HARDY FRUIT GARDEN.

By T. E. Tomalin, Gardener to the Earl of Bessborough, Stansted Park, Emsworth, Sussex.

Strawberries.—Established plantations of Strawberries will now benefit by an application of superphosphate, at the rate of two ounces to the square yard. This should be forked in lightly for anything in the nature of deep digging is detrimental to the plants, and should be avoided. If the plantations have already been forked over, the manure may be hoed in. The superphosphate should be supplemented by a dressing of sulphate of ammonia, at the rate of one ounce to the square yard, at the end of April, when the plants are in active growth. The Dutch hoe should be used regularly on plantations of Strawberries made during the early spring, whenever the ground is dry enough, for nothing encourages growth so much, and, moreover, by its action in keeping a fine tilth on the surface of the soil, the hoe is a powerful aid in conserving moisture during periods of dry weather. Now that growth is active the defective plants in spring plantations may be readily distinguished, and replaced by plants from the reserve plot.

Espalier or Cordon Apples and Pears.—Old espaliers or cordons often show signs of exhaustion, the wood buds becoming small and weak, and the fruit buds scanty and undersized. A good dressing of farmyard manure, if forked into the soil, will do much to restore such trees to a condition of vigorous growth and fruitfulness; although it is difficult in these days to obtain farmyard manure in sufficient quantity in the majority of gardens, an effort should be made to supply a dressing to trained trees once in every three or four years at least. In the intervening years, artificial manures, such as basic slag, superphosphate and sulphate of ammonia may be used in turn, the basic slag being applied in autumn, the superphosphate in spring, and the sulphate of ammonia during early summer.

FRUITS UNDER GLASS.

By T. Pateman, Gardener to Sir Charles Nall-Cain, Brocket Hall, Hertfordshire.

Successional Vines.—In large establishments where several Vineries are under cultivation to provide ripe Grapes for the greater part of the year, the vines will now be in various stages of development, and will require constant attention with regard to disbudding, pinching of the shoots, and the removal of superfluous bunches, while in some cases the lateral shoots will need to be tied down to the wires. The operation of tying in the laterals will need great care, but much will depend on the variety under treatment. Perhaps the most difficult are Black Alicante, Appley Towers, Lady Hutt, Mrs. Pearson and Lady Downe's Seedling, but in all cases the pressure applied to bring the shoots down to the wires should be slight; the principal object is to guard against the shoots coming into contact with the glass. The house in which the Muscats are coming into bloom should be given a slightly higher temperature, which may range near 68° to 70° at night, while the temperature at closing time may reach 80°. A drier atmosphere is advisable, and as much fresh air may be admitted as the outside conditions will allow. Tap the vines daily to disperse the pollen, and it is also advisable to fertilise the flowers of the Muscat varieties with pollen from a free-setting variety, with the aid of a rabbit's tail. When it is noted that the bunches have set well, attention should be given to watering the borders and feeding the roots with diluted liquid farmyard manure, or an approved vine fertiliser, if stimulants are considered necessary; at this stage, the night temperature may fall to 65° on cold nights.

Peaches and Nectarines.—Peaches and Nectarines that are growing under glass, under the coolest possible conditions, will, by this date, have passed out of flower, but at present it will not be wise to thin the fruits too severely; this work may be carried out at a little later date, when the fruits that are swelling may be more easily detected. The principal work at the moment will be the removal of the young growths, and this operation may be carried out at intervals lasting over a period of three weeks. In the first place, remove all shoots that are badly placed, finally removing all except the leading and basal shoots, which may be left to provide next year's fruiting wood; these notes are intended for older trees which have filled their allotted space. More shoots may be left on the leading growths of young trees where extension is needed. Now that the trees are growing freely, see that the borders are well supplied with water, and during hot days, with drying winds, damp the floors rather heavily twice daily, but on the other hand, if the weather is wet and cold, less moisture is required.

THE FLOWER GARDEN.

By J. G. Weston, Gardener to the Duke of Devonshire, Chatsworth, Bakewell, Derbyshire.

Violets.—Preparations for transferring plants from the frames to their summer quarters should be hastened, so that no delay occurs when the weather is favourable. Violets are universal favourites, and no pains should be spared to produce good plants, ready to plant in frames for the production of flowers during the autumn and winter months, when they are so much appreciated. Unless thorough cultivation is given during the summer months, it is not possible to have satisfactory plants when the time arrives for transferring them to the frames in the early autumn. If the local conditions are such that the soil becomes hot and dry in summer, a position partially shaded during the hottest part of the day should be selected, but if the soil is a cool, deep loam, an open position is most suited to the cultivation of plants which will give the best returns during next season. The ground should have been manured and trenched or dug deeply some time previously, to allow it to settle down; in any case, it should be made firm before planting, for very loose soil should be avoided. Fork the soil lightly, rake the surface and draw shallow drills. If the soil is lumpy a little fine, light soil, scattered in the drills, will assist the plants to make a good start. Should the weather be dry, give a light watering every afternoon till root action has definitely commenced. For the stronger-growing varieties, such as Princess of Wales, the rows should be at least eighteen inches apart, and the plants the same distance in the rows; but for the less vigorous singles, and for the double and more compact-growing varieties, six inches less will suffice. The plants in the frames should have been fully exposed before planting in the open ground, or the tender foliage will be liable to considerable damage in rough weather. Rooting cuttings or runners is a good method of propagation, but if this has not been carried out, division of the plants is recommended as suitable for general purposes. Select strong, healthy crowns, discarding or planting out in the wild garden or woodlands any surplus roots. At this date, most of the crowns will have good, healthy roots, and will be in capital condition for planting out. Plant firmly in dull and showery weather, and be careful not to bury the crowns; but if the young plants have to be planted in hot and dry weather they should be watered in; continue to give light waterings till they are fairly well established. An occasional dusting of soot will protect them from slugs and form a capital fertiliser; it will also assist in the prevention of red spider attacks.

FOR NORTHERN GARDENERS.

By A. T. Harrison, Gardener at Jordanhill Training Centre, Glasgow.

Protecting Fruit Blossom.—Trees on south walls are now coming into flower, and as frosty nights are by no means of rare occurrence after sunny days, some means should be employed to protect them from damage. Glass copings, with screens to draw along the front, are undoubtedly the best, and are most easily put on and removed again during the day, but a double thickness of netting, if kept away from the wall by props, may be relied on to ward off a few degrees of frost. On east and west walls trees are correspondingly later in flowering, and so are in less need of protective measures. So soon as the coverings have served their purpose they may be removed, and a close watch should be kept for the first appearance of insect attacks. Plums are very susceptible at an early stage to attacks of green-fly, unless control measures have been taken during the dormant period.

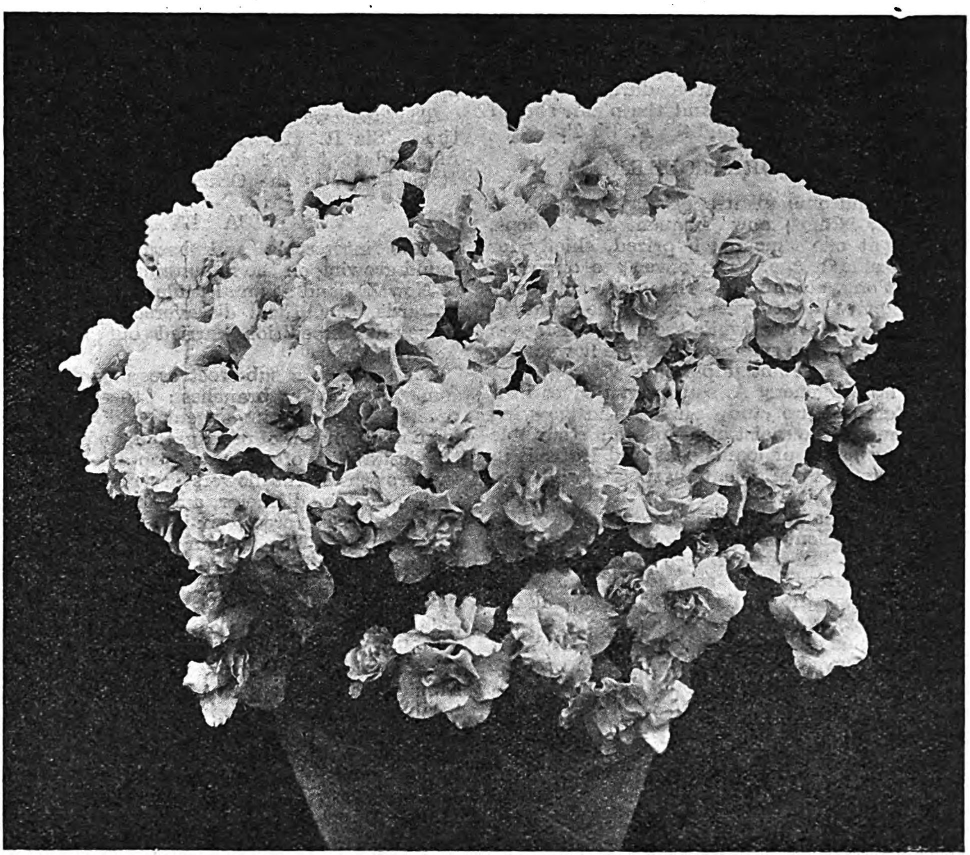

FIG. 120.—AZALEA INDICA CHARME DE NOEL.

R.H.S. Award of Merit, March 27. Flowers semi-double, deep blush pink. Shown by Mr. W. F. Gullick. (see p. 236).

Roses.—Pruning of the various sections of Tea, Hybrid Tea and Hybrid Perpetual Roses should be no longer delayed, for the sap is rising rapidly. Newly-planted Roses should be pruned fairly hard, to encourage strong growth, while established plants may be treated more leniently, especially where the object in view is to make a display. With this aim, many of the strong-growing varieties should have last year's shoots left almost intact, and where space permits the longest of these may be pegged down around the plant, but exhibition flowers are not produced by this method. When the pruning has been completed, the beds and borders should receive a dressing of well-compounded artificial manure, at the rate of four ounces per square yard, and this should be forked lightly in. Later on, before dry weather sets in, a mulch of partly decayed manure may be spread evenly over the surface; this not only assists in supplying nourishment to the plants, but also keeps the borders cool and moist during the summer months. Roses growing against walls should be watched carefully during the early months for the first sign of attack by green fly, and measures taken to keep this pest under control by spraying with an approved insecticide.

Spring Bedding.—The various plants employed for filling the beds are now moving freely, and will be greatly assisted by frequent stirring of the surface soil which has become caked and consolidated by the winter's rain and snow. Any blanks that have occurred may be filled up at once from the reserve ground, and the whole left as tidy as possible. Where Arabis, Myosotis or Aubrietia are used as a groundwork for bulbs or Wallflowers, they give the beds a furnished appearance, and when formed into a good carpet they also prevent the flowers of Hyacinths, Tulips, etc., from becoming splashed during heavy rains. Violas may also be used in this manner with very good effect, and these, if planted early, may be expected to continue flowering till the end of the season. Polyanthuses and Primroses are also useful plants for spring bedding, and may be employed in many ways, while wherever possible full use should be made of permanent beds or borders for the various forms of Erica carnea.

Hardening-off Plants.—The time has again come round when many plants, both vegetables and flowers, that have been raised under glass or, at least, given protection during the past few months, may be prepared gradually for their permanent quarters out-of-doors. Peas and Beans raised under glass should now be placed outside in a sheltered corner, and an early opportunity taken of planting them out. Sweet Peas should be staked with small twigs to keep them erect, and placed outside for a few days preparatory to planting; the occupants of frames should not be allowed to suffer for want of water, but this should only be applied when the weather is mild.

INDOOR PLANTS.

MARANTAS AND CALATHEAS.

These beautiful stove foliage plants should be starting into fresh growth now, and will need repotting. The best compost for this purpose consists of good turfy loam, leaf-mould and peat; it should be used in a rather rough state and plenty of silver sand and some charcoal may be added to it to ensure openness of texture, which these plants love. As they require an abundance of water, both at the roots and from the syringe during the summer, good drainage is essential.

Where conditions permit, Calatheas and Marantas may be planted in borders, for they are very effective if treated in this manner. Some varieties, however, are apt to become somewhat gross and lose their delicate colours and markings if their roots are unrestricted; these are best confined to pans or pots.

Propagation is usually effected by division, although some may be increased by cuttings, which should be taken below a node, and will be found to grow readily in an open rooting medium with bottom heat.

Calatheas and Marantas always require humid conditions; the temperature during summer should not fall below 65°, and the plants should be shaded from hot sunlight. *F. W. T.*

APHELANDRA SQUARROSA.

This handsome plant, often known as A. Leopoldii, is not now frequent in gardens, but was at one time much prized, chiefly for its handsome foliage. The leaves are opposite, ovate-oblong, acuminate; the upper surface is an attractive dark green, with the mid-rib and veins pure white, while the under-surface is of an uniform pale green colour. The flowers are citron-yellow and not unpleasing.

Like its congeners, A. squarrosa thrives in a stove temperature and, during the growing season, requires a moist atmosphere; a suitable compost consists of loam, peat and leaf-soil in equal parts, with sufficient sharp sand added to guarantee porosity.

A winter rest in a temperature of 50° to 55°, with just sufficient water to prevent shrivelling, is necessary. In spring, the plants may be pruned, repotted, and started into growth, when a temperature of 65° to 70° is appreciated by this Brazilian species.

Propagation is effected by cuttings of the half-ripened wood. If such are grown on without stopping, they will flower during the first season. A squarrosa was introduced from Brazil in 1854. *A. C.*

ALPINE GARDEN.

ARENARIA NORVEGICA.

The ease with which Arenaria norvegica may be grown under cultivation rather belies the fact that it is a rare plant. It is usually quite happy in sandy soil, especially when supplied with a little lime in the form of chips; the base of a sandy bank in the rock garden where it may obtain underground moisture from above, will suit it admirably, and if it is left alone, seedlings may appear round the parent plants every year.

While A. norvegica is not to be classed as a beautiful plant, it enjoys the charm and interest which we attach to all minute and rare alpines, particularly so when we can associate with the plant the brilliant though short life, and the tragic death of its discoverer.

In habit, this Arenaria is lax and sprawling, producing, from a tap-root, a short stalk which branches into numbers of radiating leafy stems that trail along the ground and bear their tiny, white, starry blossoms throughout the summer months. Botanically, the inflorescence is a cyme, but it is very small for such a distinction, and although it is probably a perennial in the wild state, the Norwegian Sandwort soon dies off in gardens. Frequently it is biennial, and occasionally it may aspire to a third year of existence, after which it may be replaced with self-sown seedlings, or by plants raised from seeds sown in a cold frame in the spring.

If space can be spared in the frames through the winter, seeds may be sown so soon as ripe; the seedlings should have germinated by the autumn, and if carefully tended will survive until spring, but they are very liable to damp off. Seedlings should always be planted at the first opportunity, the tap-root being a sure indication that they will transplant badly if left too long.

The distribution and botanical classification of this species are of interest. Sowerby appears to make it synonymous with A. ciliata; Bentham and Hooker distinguish it as the Scottish variety of A. ciliata, and give several botanical differences, such as succulence, shorter peduncles, and the fact that it is more glabrous than the type; but they also include the Orkneys, and the Shetlands as localities for A. ciliata.

Edmonston found A. norvegica growing in loose gravel, north and north-east of Baltasound, in the Shetlands. If one may quote from the pen of this gifted young botanist, we learn that "This is a very rare and little-known plant, frequently confounded with A. ciliata—except one specimen in Sir W. T. Hooker's herbarium, from Iceland, I have seen none which precisely agrees with the Shetland plant." Hooker acknowledged Edmonston as the discoverer of A. norvegica as indigenous to Britain.

The latter was only fifteen years of age at the time. Sir R. Murchison and Mr. Reach are reported to have found this plant on North Ronaldshay, in the Orkneys. *L. B. C.*

VERONICA LYALLII.

This interesting and beautiful species is found growing on the mountains of both islands of New Zealand at an altitude of 2,000 feet and upwards. Dr. Lyall discovered it when on a surveying expedition carried out by H.M.S. Acheron.

V. Lyallii is a sub-erect creeping plant with somewhat woody branches; these latter are prostrate and root in congenial soil, thus affording a ready means of propagation, and suggesting the desirability of an annual top-dressing among the growths. The flowers are rather less than half-an-inch in diameter, and the number borne in the slender, erect, six-inch racemes varies considerably. The colour is also variable, but usually white, veined with pink, while the anthers are purplish, hence the general effect of a mass of flowers is a pleasing tone of pale pink, above a dense assemblage of small, roundish, bluntly-toothed leaves. V. Lyallii is a capital plant for a rock garden, and should be planted so that as it becomes established, it may creep along and spread over the extremity of a rounded stone, as shown in Fig. 122, p. 249. Some of the New Zealand Veronicas are not easily managed, but V. Lyallii seldom fails to satisfy its owner, while its stem-rooting habit is a means of ensuring longevity. *B.*

ANDROSACE FOLIOSA.

This Himalayan species is a little coarse, perhaps, when compared with many of its congeners from the European Alps. The somewhat large, hairy, Auricula-like leaves are not arranged in rosettes, but are distributed on erect and trailing stems; they are greyish-green in colour, changing in autumn to a not unpleasing reddish tint.

The umbels of rosy-red flowers are produced from June to September; they change colour with age, and it is not unusual for secondary, smaller heads of flowers to be produced from the centres of the first clusters.

A. foliosa thrives in full sunshine, and if it is planted in deep limestone soil, to which has been added some leaf-soil and grit, it will spread rapidly into large tufts. It is easily propagated by cuttings, or it may be raised from seeds, which are produced under favourable conditions. Offsets are produced after the manner of the Auricula; in fact, A. foliosa approaches very near to the Primulas in many respects. *R. E. A.*

OXALIS ENNEAPHYLLA.

It is a mistake, of which one frequently hears, to treat the two loveliest of the Wood Sorrels which are in general cultivation to the same kind of position. One frequently finds O. enneaphylla and O. adenophylla exposed to full sun, or *vice versa.* The fact is that if we wish to give each of them justice we should plant O. enneaphylla in at least partial shade, and O. adenophylla in full sun. The purpose of this note, however, is to speak of the Patagonian O. enneaphylla, its beauties and its needs.

This lovely Oxalis has now been in cultivation for a number of years, and has proved itself one of the truest beauties which have come into our gardens for a considerable period. It is a delight to come upon it in a half-shaded nook of the rock garden, and to see its charmingly divided foliage, and its wax-like flowers, of purest white, which are very large and exquisite in their texture. The rose-coloured form, O. e. rosea, does not appeal to the writer so much as the white one, but he has friends who prefer it to the latter. If given a cool corner, in loam and leaf-soil and a little sand, Oxalis enneaphylla soon increases in size, and one must deprecate frequent division as it lessens the beauty of the plant when it is reduced in size, although where multiplication of stock is desired, it may be done with safety in spring. I always think we have no other Oxalis which could fill the place it occupies in the garden.

SAXIFRAGA BURSERIANA SULFUREA.

In my garden this was the earliest of the Saxifrages to flower this year, daring the many vicissitudes of a wet winter, varied by sharp spells of frost, and was in flower before the Snowdrop. It is said to be of hybrid origin, and it is, I consider, rather unfortunate that it has been named as if it were a variety of S. Burseriana, instead of being given a more distinctive title. I know of no variety of S. Burseriana with any but white flowers. Those of the variety sulfurea are of a delightful soft sulphur-yellow. They are borne on little pinkish stems, and are of the rounded form appreciated by the florist. S. B. sulfurea has flowered well in a moraine with a proportion of lime in the compost.

SAXIFRAGA IRVINGII.

Although we have now a considerable number of Kabschia Saxifrages with pink or rose flowers, S. Irvingii is likely to remain a favourite with many of us. It was the first break, I believe, among the hybrids to give us flowers of its colour. The pink is, perhaps, a little pale for those who like more decided colours, but it is a highly pleasing tone, and the flowers show beautifully on the blue-grey of the close cushion of spiny leaves. The stems are only an inch or a little more in height. It was worthily recognised by the Floral Committee of the Royal Horticultural Society by their Award of Merit. Its parentage appears to be a little obscure, but it is reputed to be the produce of the union of S. Burseriana and S. Frederici-Augusti. By the way, the latter seems to be becoming scarcer in nurseries.

Many of us will be glad to have such a pretty little Saxifrage, not only because of its intrinsic beauty, which is great, but also because it bears the name of that distinguished alpinist, Mr. W. Irving, of Kew. I am growing it here in a moraine, where it is doing well and flowered very early this year. *S. Arnott.*

HARDY FLOWER BORDER.

IRIS GRACILIPES.

Those who know the delightful little Iris gracilipes, from the cleared woodlands of the sides of the Japanese hills, are not likely to forget its beauty, even when compared with the unsurpassed charms of so many of its kindred plants.

That this Iris is not an easy subject to grow everywhere will only whet the desire of the enthusiast to succeed with it, and its requirements do not appear so formidable that it cannot be cultivated without any hope of retaining this gem in the garden. The precise conditions are, practically, a position not too sunny, yet not absolutely overshadowed, with a little shelter from the worst storms, and light, woodland soil. I have grown it in a soil not so free as that of the woodlands, yet it was quite successful.

It is a small Flag Iris of distinct beauty, with pretty leaves and exquisite pale-blue flowers which have golden beards and light-coloured eyes, with all the beauty of texture present in so many of the race.

Iris gracilipes is not rare in commerce, although it is not a cheap plant, but a word of warning may be given to those anxious to increase their stock. It appears to resent disturbance and division unless the plant is a large one. It may, I believe, be raised from seeds, which are offered for sale.

ASTRANTIA MINOR.

Astrantias, or Masterworts, do not appeal with any force to the average owner of a garden, and of the species in cultivation probably A. carniolica, which is more suited to the border than the rock garden, is the most appreciated.

Although not possessing the pink colouring of the above species, the little Astrantia minor has some claims upon us. It has quiet charms which eventually give pleasure to the observant, even if he fails to detect them at the first glance. A. minor creates a little tuft of very fine, deeply-cut leaves, above which are carried, on slender stems, clusters of flowers, likened by one writer to "ivory stars," with the true flowers in the centre filling the "stars" with white inflorescence.

I question much if this species is a long-lived plant in our gardens, although the reason for this belief is not very apparent, but it is scarce in nurseries and gardens. It commences to flower in June or July and continues for a long time. It appears to favour limestone but grows well enough in non-calcareous soil, and we should probably give it more shade than falls to its lot with us, as it is a native of woodlands and mossy places.

If seeds can be obtained it should be raised from them, or it may be multiplied by careful division. *S. Arnott.*

FLOWER GARDEN.

EARLY-FLOWERING CHRYSANTHEMUMS.

The early-flowering Chrysanthemums have been so much improved of late years that they are almost indispensable for late flower displays in the beds or mixed borders.

Whether they are to be grown for garden decoration or for the production of cut flowers, the ground should be thoroughly prepared and enriched before it is required for planting.

Although very early propagation of outdoor Chrysanthemums is not recommended, the main batch should have been propagated earlier in the month, and may now be ready for boxing up or potting, whichever is considered most reliable.

In warm soil and in sheltered positions, the roots of the hardier varieties usually survive the winter, but there is no real gain in leaving them out in the beds or borders; it is better to lift the roots and place them in cold frames, in ashes, so that they may be divided or the cuttings taken whenever required.

If more young plants are still required, it is not too late to propagate them by dibbling cuttings into boxes of sandy soil and placing them in gentle heat; they will root quickly and if stopped once will make nice plants for placing out into the open ground early in May, according to the prevailing weather conditions.

There are so many varieties catalogued by Chrysanthemum specialists that it is unnecessary to give a list of names, but anyone starting their cultivation is advised to rely on well-tried standard sorts, rather than grow a multitude of varieties. A number of new varieties should be tried and tested under perhaps a little better conditions, and the opinions of various authorities, that have recently been published in *The Gardeners' Chronicle* (pp. 134, 188, 210) should prove of valuable assistance to those who wish to start, or extend, the cultivation of these decorative subjects. *J. G. Weston.*

ROSE GARDEN.

ROSA LUTEA HARISSONI.

It not infrequently happens that a certain kind of plant is generally admired, but it is only really impressively beautiful when seen in conditions and surroundings that suit it perfectly. An example is Harisson's variety of Rosa lutea, seen to perfection in an Oxfordshire garden last year (Fig. 123, p. 251).

Rosa lutea was cultivated in this country by John Gerard, so long ago as 1586, and may therefore be regarded as one of the oldest exotic species in cultivation. Parkinson, Miller and Aiton all referred to this handsome species, and there is an excellent illustration of it in the *Bot. Mag.* (t. 363), of 1797.

Harisson's variety appeared early in the past century, and is recorded as having been first seen in flower in the garden of the Rev. Harisson (not Harrison) of Trinity Church, New York City. Whether this is a true variety or a hybrid is a matter of some interest, and Mr. W. J. Bean (*Trees and Shrubs Hardy in the British Isles*) states that it is probably a hybrid between R. lutea and R. spinosissima. The flowers are of a lovely, deep yellow colour, fairly double, and produced in quantity on the side growths; when seen as a free-growing standard, as depicted, it is a beautiful garden Rose.

Rosa lutea bears large, single, golden-yellow flowers, and the variety Persian Yellow is a double form. R. l. var. punicea—the Austrian Copper Rose—has particularly attractive coppery-red flowers. This is the R. lutea bicolor of the *Bot. Mag.*, t. 1,077, and often produces yellow flowers among those of copper colour. In one or other of its forms, R. lutea has been made use of by hybridists, especially during comparatively recent times, with a result that our gardens are now enriched by Roses of brilliant colouring, most of which are listed under the group title of Pernetiana, a name given in honour of M. Pernet-Ducher, who was one of the first to exploit R. lutea and its varieties in the creation of a new race of vividly-coloured garden Roses. *C. B.*

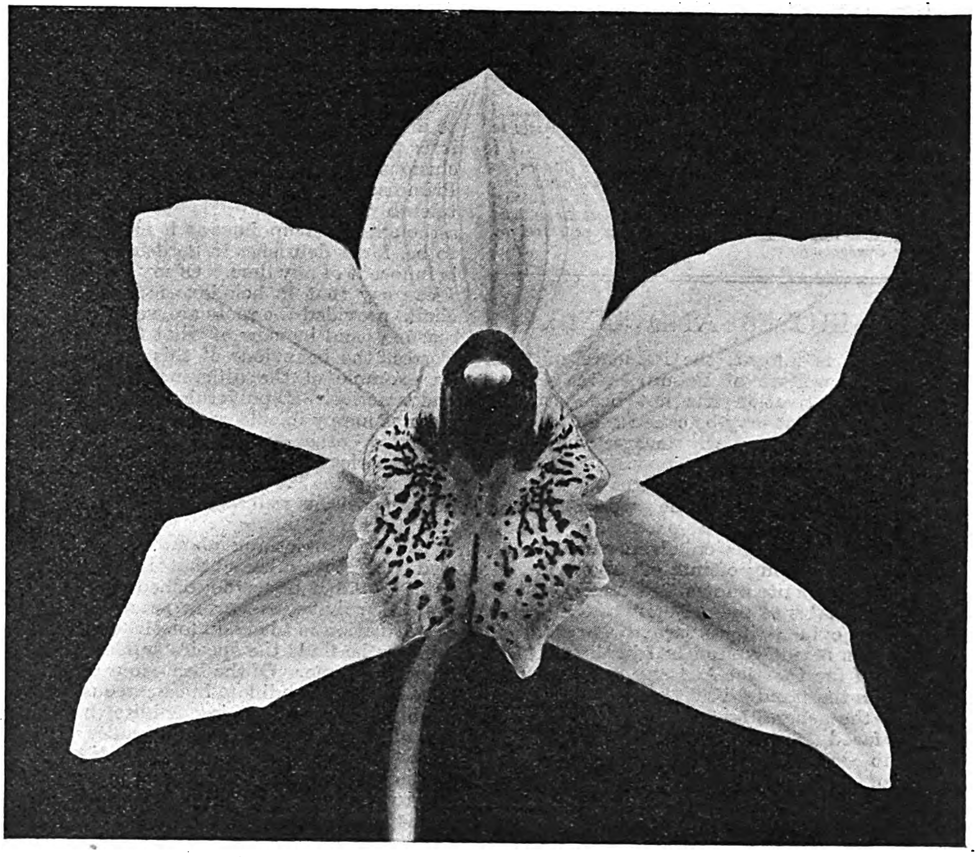

FIG. 121.—CYMBIDIUM ROSANNA VAR. MAGNOLIA.

R.H.S. First-Class Certificate, March 27. Flowers blush; lip rose pink and red-brown. Shown by Messrs. H. Alexander, Ltd. (see p. 236).

BULB GARDEN.

TULIPA PRAESTANS.

This very brilliant March-flowering species should be in every garden; the flowers, of a brilliant light scarlet colour, are produced, one to three, on the stems, and open out flat during sunshine, so that a small colony of this gorgeous Tulip will create a pleasing and even striking effect.

Like the majority of Tulip species, T. praestans is very variable, but it possesses one character by which it may always be recognised—the somewhat narrow, oblong leaves have, on the under-surface, a distinct midrib; the leaves are of a lively green colour, quite a distinct and attractive shade, approaching nearly to apple-green.

The earliest form to flower is Van Tubergen's variety, somewhat dwarf, and distinguished by scarlet filaments; another form, with a different geographical range in Turkestan, and flowering later, will attain a height of round about two feet, and its flowers are characterised by black filaments. In some forms, the stems are hirsute, in others they are quite smooth.

The leaves are numerous and rather succulent, and, with the tall stem, a tendency to top-heaviness is developed, so that it is wise to plant this Tulip in a somewhat sheltered nook on the rock garden or in a warm and sheltered border.

T. praestans increases by offsets far more freely than do the majority of Tulips, and this fact alone should endue it with greater garden value than many of its congeners possess. Moreover, I find that a colony of T. praestans may, for some seasons, remain undisturbed, and will grow and flower with unabated vigour, but for most Tulips an annual lifting and drying appears to be almost essential. This species is finely figured in *Bot. Mag.*, t. 7920. *Ralph E. Arnold.*

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PRIMROSES AND LIME.

SO far as is known, the influence of lime on the welfare of Primroses in general under cultivation has not been studied seriously, and what may be called the literature of the subject is singularly meagre; in fact, it amounts to little more, apparently, than a brief, occasional reference to the subject in the horticultural press or in some gardening book usually in relation to a particular species. The R.H.S. Conference on Primroses, held in 1913, yielded nothing of interest about it.

The lack of definite information on the subject so far as it relates to the majority of the genus, is the more evident if we turn to Messrs. Cox and Taylor's recently-published book on Primulas, which for the time, at any rate, may be regarded as the standard text book of the genus, for there the general ignorance on the point is frankly faced.

The subject is of especial interest to cultivators because of the numbers of new species of Primula which have found their way here since the century began, from Asiatic regions where, paradoxically, much of the flora, although growing in and on a limestone formation is evidently not necessarily calciphilous, nor of the type generally associated with such formations. The variety and richness of the Rhododendron genus in Yunnan is a case in point. As pointed out in Messrs. Cox and Taylor's book, the subject is complicated by the difference in the nature of the lime ordinarily met with in Britain and in those areas of Yunnan where limestone prevails, and where, as already explained, Rhododendrons and Primulas flourish to an unparalleled extent. Mr. Forrest has placed it on record that "when you leave the limestone area, you leave the Rhododendrons behind," and the same is true of Primroses, of course, with the qualification that in each case the disappearance of the genus is comparative.

It has been established by analysis of the specimens of Yunnan limestone Mr. Forrest has been at pains to bring home, that it is magnesian, comparable to that found in Derbyshire and the north of England—a comparatively restricted area wherein, incidentally, is the garden in which the late Reginald Farrer worked so assiduously, and where no doubt there are many keen gardeners who are able to experiment for themselves. This is a very different form of lime, and I was going to add, poison, from that which prevails in the south, where chalk predominates, or in parts of the midlands and the west where the lime is in the form of oolite; so that for southerners interest inevitably centres mainly on the behaviour of Primroses in calcareous soil.

It has already been established by experiment that some Rhododendrons from the limestone areas of Yunnan resent lime when presented to them in the form of chalk, but it is hardly possible yet to say the same of any Yunnanense Primrose: in a genus, not easy to handle in our climate, so much depends on the skill of the cultivator, the composition of the calcareous soil in which the plants are placed and other circumstances, that failures of Primroses in chalky soil may be due as much to faulty cultivation as to the chalk itself. There is, too, probably far more in it than meets the eye, inasmuch as Primroses may possibly depend for theirwelfare on specific mycorrhiza, as thanks to the work of Dr. Rayner, we know that many Rhododendrons depend. Happily, that is a point which is capable of elucidation by research in course of time, and meanwhile, cultivators may proceed by the only other road open to them—experiment in the garden.

Although there has been no concerted effort, something has already been done in this direction by amateurs whose gardening operations are carried on in calcareous soil and although, as already pointed out, the results are scrappy, it is possible to deduce certain tentative conclusions from their experience of Chinese Primroses. One is that P. Forrestii, as is tolerably well-known, is tolerant of chalk, although not calciphilous as it is sometimes said to be, for it flourishes in gardens where the soil is innocent of any lime. Of my own experience, I can say that P. helodoxa is not averse from chalk, provided the roots are wet in the growing season; and in view of what follows from Mr. Forrest, the behaviour of this species furnishes an example of the difference between theory and practice. P. pulverulenta and P. japonica seem as happy in calcareous ground as out of it, provided other conditions are satisfactory, and experience leads me to the same conclusion in regard to P. Wardii, P. Veitchii and P. lichiangensis, as well as P. Poissonii, P. Beesiana and P. Bulleyana.

There is something about P. nutans which leads one to conclude that it is a calcifugal species, and it never flourished with me; but that may have been due as much to faults of cultivation as to chalk, for Mr. C. T. Musgrave tells me he finds the species suffers a moderate amount of lime. Of the behaviour of P. Littoniana and P. secundiflora in calcareous soil I am unable to write anything definite, but perhaps this may catch the eye of some reader of *The Gardeners' Chronicle* whose experience is conclusive.

The Himalayan P. sikkimensis does not refuse to grow where there is chalk, but it certainly seems happier where there is none. The Yunnan form of this—P. pseudo-sikkimensis, a Lichiang plant—may naturally be lime-tolerant, but this has yet to be proved. Happily it is already possible to say that the giant of the section—the Tibetan P. Florindae, appears to be indifferent to chalk. Moisture seems its main requirement.

It is unlikely that anyone may have had more opportunities of considering the relation of Chinese Primroses to their natural surroundings than Mr. Forrest, and on seeking enlightenment from the explorer, he has expressed himself to the following effect:—"Except in a very general way, I should not care to say which species of Primula I consider calcifugal and which calciphilous, if only for the reason that not a few which in their natural habitats are apparently at their very best on a purely limestone basis, thrive when away from that basis. On the other hand, it remains to be proved whether those species not found on limestone formation would dislike the latter or not. So, with that reservation and with some hesitation, I append the names of a few species found on formations either partly limestone or other than pure limestone. Of these the most exceptional is P. helodoxa, which I discovered growing on very boggy pasture overlying rotten quartz or granite, and I do not remember that I ever saw it elsewhere than in such a situation. The same may be said of P. burmanica."

"Of woodland species growing in humus overlying gneiss, mica and granite strata, there are the following Primula species:—cinerascens, seclusa, Agleniana, eucyclia, Valentiniana, some of the finer small forms of P. calliantha, and possibly P. serratifolia, though this species is also found over a wide area of the Tali and Lichiang ranges, which, as you know, are limestone. You will observe that most of the species enumerated are plants of the western frontier ranges, away from the large mass limestone formation of the centre and north centre of the province of Yunnan."

Mr. Forrest adds that at least eighty per cent. of the known Chinese species grow on limestone in Yunnan, a condition of affairs comparable to that prevailing among Chinese Rhododendrons.

Little can yet be written about the calcifugal tendencies of the last comers of the Primula genus from western China, Burma and Tibet. P. Florindae has already been mentioned, but P. sonchifolia, P. Agleniana, P. ingens, P. muliensis, P. microdonta var. alpicola and P. Waltoni have still to be tested; and there are many more.

Luckily, there is less ignorance about the European Primroses, and their likes and dislikes are pretty-well known. It seems almost certain that P. Allionii is markedly calciphilous, even to the extent, apparently, of declining to grow away from lime, the opposite of P. glutinosa, a species of pronounced calcifugal propensities. P. hirsuta is less sensitive, but as a moraine plant seems more at home in granite than in limestone chips. The reverse may be said of P. glaucescens, and P. Clusiana seems to pine for lime; P. viscosa does not mind it. It is generally recommended that P. farinosa should be grown in loam rich in humus, and I have not found the presence of lime harmful to the species or to the variety, scotica. P. marginata is indifferent to chalk.

Of the commoner Primroses of the Himalaya I have noticed that like P. denticulata, both P. involucrata and P. rosea tolerate calcareous soil. Of the new Wardian species, P. erythrocarpa, I express no opinion, but P. capitata and the form Mooreana certainly grow well where there is chalk. The Caucasian P. Juliae is neither dependent on lime nor does this species object to it.

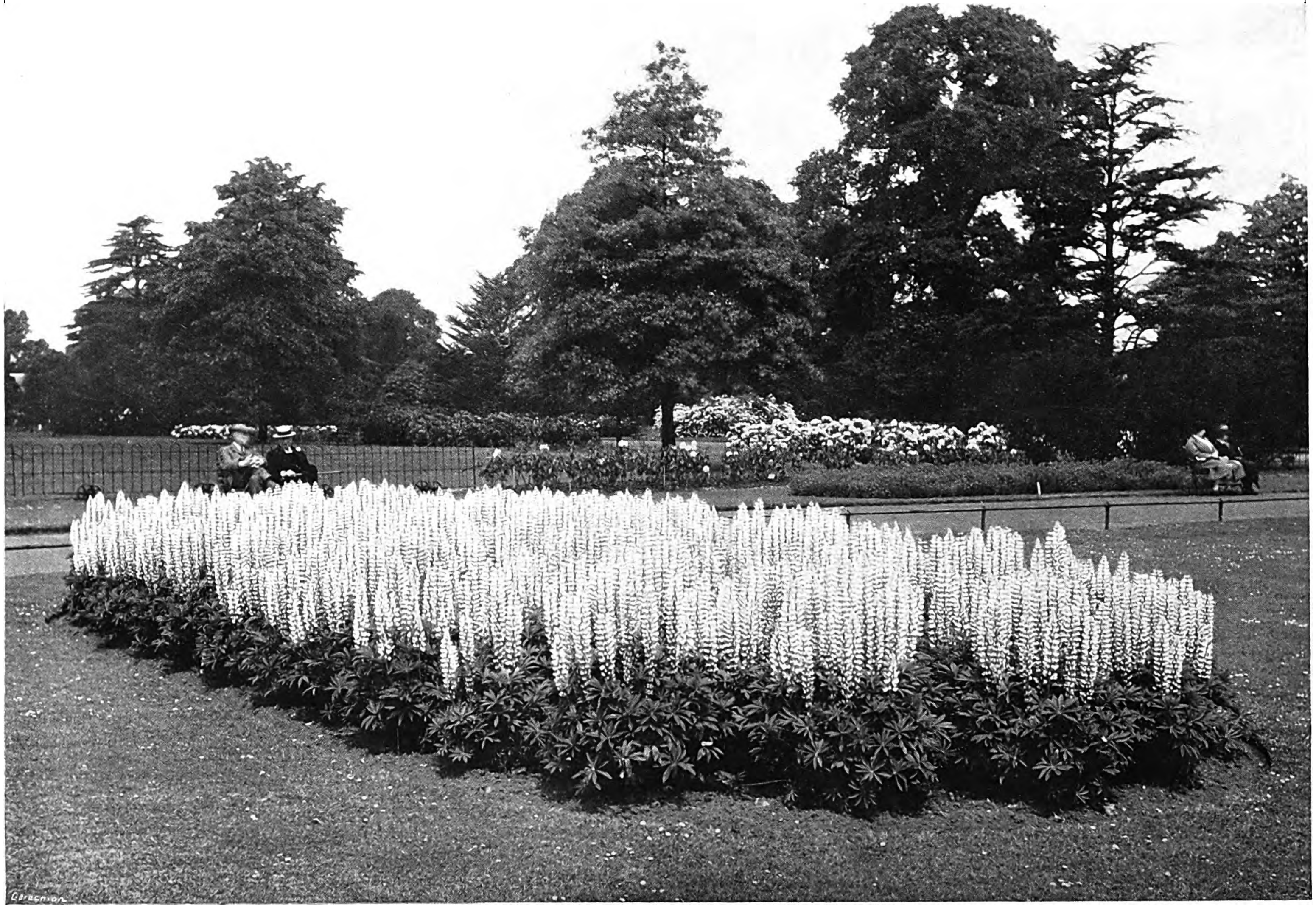
A fair conclusion on the whole matter seems to be that while lime in the form of chalk is poisonous to several Primroses, few seem to need it and the great majority is indifferent to it. In this respect there is an analogy between Primroses and Lilies, for while quite a few of the latter genus are definitely calcifugal, he would be a bold man who asserted that lime in any form is necessary for any Lily.

Somehow or other, whether by accident or design, it is the case that many, if not most of the keen cultivators in this country whose experience is a guide for others, have no occasion to concern themselves about the calcifugal qualities of plants because the question does not arise for them, and so they are able to throw little light on a subject which is of almost vital interest to thousands of gardeners who live on a lime formation of one kind or another. It is to the latter that we must look for information on a matter about which there is woeful ignorance. *A. Grove.*

RAISING PLANTS FROM COLLECTED OR RARE SEEDS.

FOR several years past there has been a constant stream of seed packets from various collectors. Fortunately, these collectors have been, and are, for the most part, engaged in climates as cold, or colder, than our own, so that the provision of sufficient warmth for germination is not a difficult matter. In the past the work of raising plants from collected seeds was, to a great extent, carried out either by the nurseryman, or the botanic or other public institution responsible for sending out the collector. In such places, the work is still being done under more or less suitable scientific conditions, by men who devote the whole or the greater part of their time to it.

In private gardens the matter is on an entirely



LUPINUS POLYPHYLLUS IN THE ROYAL GARDENS, KEW.

different footing. Most gardeners probably had their hands full before undertaking to raise a share of the seeds now being sent home. The new interest was in most cases warmly welcomed by the gardener and his staff, although the additional work is considerable, and the conditions often far from favourable. Few gardeners can devote a house and a set of frames exclusively to the purpose, so the seed-pots are accorded room amongst others, and the seedlings compete for space with the hundred other requirements of a large establishment.

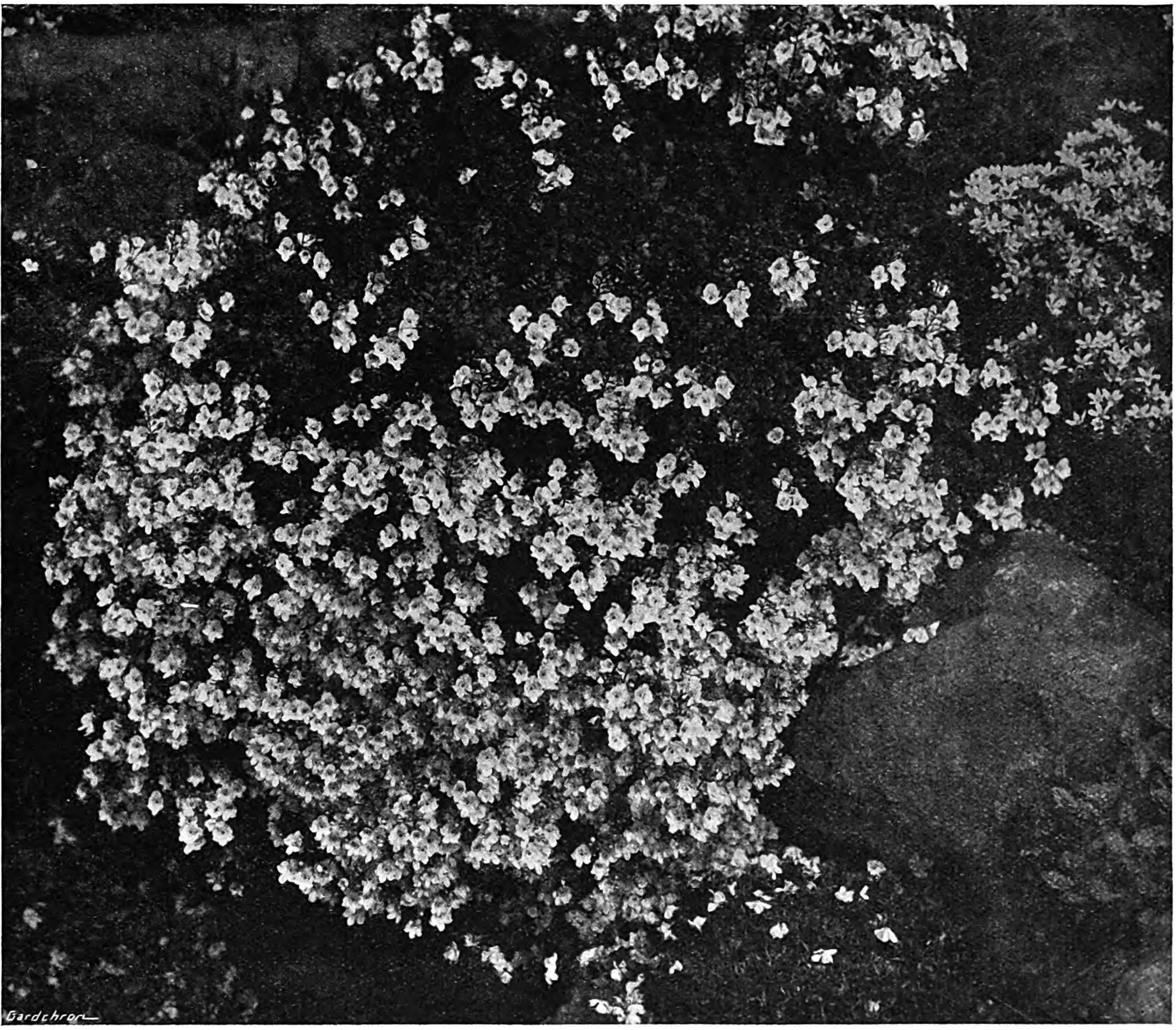


FIG. 122.—VERONICA LYALLII.
(see p. 246).

The proportion of annuals or biennials collected has not been excessive. There has been a fair number of dwarf perennials suitable for the rock garden, or taller ones which found a home in the flower borders, several fine Lilies, a certain number of evergreen and deciduous flowering and berry-bearing shrubs, and trees; but beyond all comparison is the host of Rhododendrons, varying from dwarfs of a few inches to giants of eighty feet or more in height. Those who are able to give these collections the attention required in the juvenile stages, and sufficient room as they develop, will undoubtedly be well repaid. All species introduced are not likely to be successes. A certain percentage will be unsuited to our climate, or the conditions obtaining in the rich soil and semi-shade of many gardens. It is not necessary to travel beyond our own country to find instances of this; the brilliant blue, floriferous Viper's Bugloss on the cliff face at Beachy Head is a totally different plant when grown in an ordinary border. Again, others regarded by the collector as "ugly ducklings" may prove really good garden plants, or of special value for hybridisation, just as the insignificant Gerbera viridiflora when crossed with G. Jamesoni, brought about the beautiful hybrids now in commerce. The work of the collector and grower, however tedious, and maybe at the time apparently without recompense, is rarely in vain.

To-day we have the advantage that collected seeds are delivered in much less time than formerly, accompanied by short field notes giving the altitude, etc., at which the plant was found. When unpacking, it is as well to check the packets, for some may have been necessarily omitted and will be a cause for inquiry later. Field notes, used at the potting bench, are soon in a disreputable state; it is therefore wise to make a working copy to start with. Such notes, however, should only be taken as a partial guide to the requirements of the plants, and may be followed with discretion. Skilled growers are generally close observers and soon learn by this faculty the treatment most likely to result in success. The successful method may differ considerably from the conditions under which the plant grows in its native habitat. For instance, Lobb, the collector, always maintained that the epiphytic Orchids he introduced needed nothing more than a log of wood to grow on; but only a few Orchids are grown in that manner to-day. Many of the epiphytal Rhododendrons succeed in loam and leaf-mould, and grow quite comfortably without being placed in the fork of a tree; indeed, it is probable that such a position would be far too dry in this country.

The best receptacle to sow in must be decided by the quantity of seeds and their character. For small quantities we use a five-and-a-half-inch pot, half-filled with drainage; surplus water has a better chance of passing away than from a shallow pan or box, and the soil may be kept in a more equable condition than in a smaller pot.

The soil required may be divided into three kinds. A sandy leaf-mould permeated with roots in which Heaths grow freely will suit Ericaceous plants and others of a similar character. Loam and leaf-mould, with plenty of grit, may be used for herbaceous and alpine plants. Trees and shrubs, with many others that are slow in germinating, require a more stable soil consisting of loam with plenty of coarse sand, for although the mixture of leaf-mould or peat is sometimes favourable to the seedling, it is inclined to decay before germination takes place, unless very carefully watered. The rough material selected to place over the drainage should also be as permanent as possible in character.

Labels intended for two or three years' service should certainly be of zinc, using indelible ink or white paint and a lead pencil. The lettering on wooden labels becomes illegible when most needed.

Sow the major portion of the seeds so soon as they arrive. There is always a danger when sowing small, light seeds, that some, missing the pot, will fall on the bench and be placed in another pot with the soil, causing much confusion later. To obviate this, stand the pot on a shallow tray or the lid of a large cardboard box. Some successful raisers of rare seeds recommend soaking the large, hard, seeds in warm water until they show signs of softening, and after sowing, placing them in a high temperature to germinate, but decreasing it so soon as the plants are fairly out of the soil. Personally, I prefer to sow seeds from temperate regions directly in, or on, moist soil, and subject them to only moderate artificial heat, or none at all, according to the character of the plant. When the outer coat of the seed is particularly hard it is often desirable to chip or file it, to allow moisture to reach the vital parts. To cover a seed its own depth is a good rule, but a little addition should be made in the case of the larger seeds, or they may heave themselves on to the surface during germination. If the soil used is fairly moist, and means are taken to prevent excessive evaporation afterwards, water will not be needed for some time; to water newly-sown seeds heavily is to court failure, especially when they have been dried.

When preparing a house or frame for seeds, cleanse it thoroughly and set poison or traps for mice or other vermin.

Seeds of some genera, even those out of the same capsule, are very variable in their germination. It is possible that only a few seedlings will come up during the first season; more are likely to appear in the second, especially if the pots have been exposed to frost and snow during winter. Again, if the pots are kept, another set may appear the following season. The late Sir Michael Foster once stated in *The Gardeners' Chronicle* that Iris seeds sown by him germinated in the way described over a period of fifteen years. It is therefore wise to keep the pots containing rare seeds for some time.

The fine moss which grows on seed-pots is undesirable, and should be reduced, when it occurs before germination, by covering the pot with a piece of slate; so far as my experience goes, moss never prevents seeds from germinating, nor can I say that it is very injurious to the young plants. Liverworts and allied plants should be picked off with a pointed stick so soon as seen, or they will cover the pot with a leather-like coat, through which no seedling can penetrate. Pots containing fine seeds, not covered by soil, should be placed together, as they usually require more shade and greater care in watering than seeds of larger size. *J. Comber, Nymans Gardens, Handcross.*

EFFECTS OF SUDDEN SEVERE FROST ON MARCH 13.

The effects of a sudden fall of temperature to 18° on many plants grown at Willbrook, Co. Dublin, which had withstood the cold weather before Christmas, is so marked that some details may be of interest to your readers.

Why such plants as Ligustrum ovalifolium variegatum aureum, Olearia macrodonta, Abies Forrestii, varieties of Phormium, Laurels, Bay, Viburnum Tinus, Leycesteria formosa, are all badly injured, whilst others, supposed to be more tender, such as Olearia semidentata, Artemisia arborea, Beschorneria yuccoides, Convolvulus Cneorum and Cytisus monspessulanus, have escaped practically free from injury, is difficult to explain, especially as growth had not begun.

The cold spell began on Friday, March 9, with severe hail showers. On Saturday, March 10, some snow fell. On Sunday a cold north-east wind blew, with heavy snow showers, and the Dublin hills were covered with snow. At 9 a.m. the thermometer registered 29°. The Monday was very cold with continuous snow all day, and the thermometer did not rise above 28°. On Tuesday morning it had fallen to 14°, and there was over seven inches of snow in the open field. The day was fine, but the snow remained frozen on the trees and shrubs. On Wednesday, the thermometer registered 25°, and again the day was fine, with bright sun. Such was the visitation.

For some days the injury did not appear very serious, but when these notes were made a fortnight later it was realised how much damage had been done. The contrasts of injured and uninjured in Rhododendrons are remarkable, and not what one would have anticipated.

The following is a list of the plants injured and those comparatively uninjured, made during a walk round the garden. From this it will be seen that the injured and uninjured frequently grow close together with the same amount of shelter or exposure. The letter "W" indicates that the plants so marked are against a wall.

Injured.

Magnolia grandiflora, broad-leaved Myrtle, variegated Myrtle, Rhodostachys (W), Veronica Hulkeana, very badly; Clianthus puniceus (W), flower buds and leaves killed, branches cut back; Sophora tetraptera (W); Brachyglottis repanda (W), practically dead; Ribes laurifolium (W), Camellias all defoliated, flower buds killed; Clematis Armandi, all foliage killed; all broad-leaved Veronicas badly injured; Pittosporum Mayi, P. tenuifolium, and P. Silver Queen have lost all their leaves; Erica arborea, E. lusitanica and E. Veitchii have all young growths cut; Hypericum Henryi, badly cut; Trochodendron aralioides, Ceanothus, in the open; Cordyline lentiginosa, Raphiolepis japonica var. Delacouri, Escallonia organensis, Pieris Forrestii and P. formosa; Prunus Laurocerasus schipkaensis, P. L. Zabeliana and P. L. Mischeana; Olearia stellulata, Viburnum cinnamomae-folium, Itea ilicifolia, I. yunnanenis, Myrtus Luma, Stranvaesia species, badly cut; Leycesteria formosa, Olearia macrocephala, Lomatia ferruginea, Disanthus cercidifolius, Nothofagus Dombeyi, Corylopsis Gotoana, C. pauciflora, C. platypetala, Arbutus Unedo, leaves burnt; Viburnum Tinus, Laurus nobilis, Ligustrum ionandrum, Olearia avicenniaefolia and O. oleifolia, Euphorbia mellifera, Ribes speciosum, Jasminum revolutum, Buddleia Forrestii, severely; B. paniculata, Osmanthus Delavayi, Grevillea sulphurea, G. rosmarinifolia and G. thyrsoides, all three blackened on side exposed to wind; Olearia macrodonta, badly blackened; Senecio Huntii, killed; Abies Forrestii, Prunus Blireiana, Phormium tenax, all varieties except Powerscourt, badly injured; Pyrus Ringo pyramidalis, Ligustrum ovalifolium variegatum aureum, all leaves fallen off; Sarcococca humilis, Embothrium coccineum, all buds killed; Drimys Winteri, Pittosporum nigrescens, defoliated; Leptospermum Chapmanni, Cytisus fragrans, badly cut; and Hypericum balearicum.

Uninjured.

Billardiera longiflora (W), Fremontia californica (W), Correa Harrisii (W), Carpenteria californica, broad-leafed form; Ceratostigma Willmottiae (W), C. Polhilli (W), C. Griffithii (W), Crassula sarcocaulis (W), Dendromecon rigidum (W), Citrange (W), Sollya heterophylla (W), Fuchsias (W), Azara Gilliesii (W), Woodwardia radicans (W), Helichrysum rosmarinifolium (W), Jasminum primulinum (W), Abelia floribunda (W), Itea ilicifolia (W), Fabiana imbricata (W), Desfontainia spinosa (W), Tricuspidaria lanceolata, Calceolaria ovata (open), C. Kayi, Olearia semidentata, Fatsia japonica, untouched; Magnolia Delavayi, Pelargonium alchemilloides, Artemsia arborea, Myrtus lusitanicus var. tarentina, Viburnum grandiflora (nervosum). Stranvaesia salicifolia, Leptospermum laevigatum, Cytisus monspessulanus, Olearia Traversii, Convolvulus Cneorum, Exochorda Wilsonii, Quercus alnifolia, Senecio Greyii, S. compacta, S. Munroi, Cistuses, including ladaniferus, immaculatus, lusitanicus, populifolius, recognitus, and cyprius, all untouched; Drimys aromatica, slightly touched; Feijoa Sellowiana, edge of leaves slightly touched; Olearia macrodonta, Rowallane form; Eucalyptus coccifera and E. pulverulenta; Beschorneria yuccoides, Euphorbia Wulfeni, blue-fruited Elder (British Columbia), Eucryphia Billardieri, E. cordifolia, E. pinnatifolia, Cotyledon, Centaurea Clementei, Senecio leucostachys, Epigaea asiatica, Calceolaria violacea, Berberidopsis corallina, Calycotome spinosa and Lithospermum rosmarinifolium.

Rhododendrons.

Injured.—R. Lindleyi, R. Davidsonianum, R. yunnanense, R. sperabile (F. 888) badly; R. lutescens, R. glischrum, R. Aucklandii roseum, R. basilicum, R. insigne, slightly; R. cornubia, R. Aucklandii, R. William Watson, badly cut; R. campanulatum, R. neriiflorum and R. dauricum.

Uninjured.—R. crassum, R. Maddeni, exposed position; R. callimorphum, R. decorum, R. Falconeri, R. decorum, R. sino-grande, R. diaprepes × auriculatum, R. auriculatum × discolor, R. fictolacteum (K.W. 4,509), R. orbiculare, R. Williamsianum, R. tephropeplum, buds uninjured; R. radicans, R. keleticum, R. repens, R. campylogynum, R. myrtilloides, R. cuneatum, R. roseotinctum, R. catacosum, R. impeditum series (F. 15,076), buds uninjured; in full flower ten days later; R. tritifolium, R. fulvoides (F. 21,814), R. fulvoides (F. 21,897), and R. cremnophilum. *Phylis Moore.*

CHARACTERS AND TESTIMONIALS.

There are several points on the subject of what are generally known as characters or testimonials given by a master to his employees, which always seem to be cropping up. Questions on this subject are frequently arising in practice such as, has the employee any legal right to demand from, or to compel, his employer to give him a "character" so that he may be in a position to obtain another post, and has he any remedies, and if so what remedies, against an employer who gives an untrue character? Then there is the question of whether a prospective employer has any right to keep back original testimonials which have been sent to him by someone seeking a job at his disposal? All these questions are important, and obviously the man who has some knowledge of the law on the subject will be in a much better position should the necessity arise, than the one who has no knowledge of the subject he is up against.

Dealing with the first question: Has an employee any legal right to compel his employer to give him a character? The rule here is that the employee has a perfect right to ask his employer to furnish him with a character and his employer has a perfect right to give him one, but the law will not force him to do so if he does not so wish. Therefore, although the employee may have a moral grievance against an employer who has refused to give him a character, he has no grievance which may be put right by the law, a position with regard to which many people seem to be labouring under a sad misapprehension.

Suppose, however, as is usual, a character has been given, let us now deal with the subject of this article itself. If a character is given by an employer, it must be a true one, whether it happens to be good or bad; if it is a good one, from the point of view of the employee, all may be well and good; from the point of view of the master, however, if he gives a good character to a man where he ought not to have done so, he may find himself being sued for damages in an action for deceit. What is the position when he gives a bad character to a man who deserves to have a good one? Has the servant any legal redress against the master?

If a bad character is given when a good one is due, the employee will, in most cases, be able to claim damages by way of compensation for the injury done to him, from his employer, and here, I think I cannot do better than quote a passage from the judgment in a case on the subject: "Unquestionably, the master who has given a bad character of a servant," said the Judge, "to persons inquiring after his character, is not bound to substantiate by proof what he has said, but it is equally clear that the servant may, if he can, prove the character to be false; and the question between the master and the servant will always, in such a case, be whether what the former has spoken respecting the latter be malicious."

From this it will be seen that the servant is entitled to claim damages from the man who has given a false and detrimental character, but in order to succeed in his claim he must show that the other was actuated by "malice."

At this point it is necessary to explain that malice in this connection does not mean quite the same thing as when the word is used in its general sense. It certainly includes the usual meaning attributed to it of "spite and ill-will," but it has also a more expansive meaning and goes beyond the limits of spite. In the law on this subject it may be regarded generally as a statement made with an improper motive, thus, if it is made without a genuine belief in its truth it may be regarded as being made "maliciously," for this purpose; or if the language used is more violent than the occasion admits, this, too, may be proof of malice. Of course, circumstances alter cases, and each case must be decided on its own particular facts, to see whether the motive for making the statement was founded on *bona fide* grounds or not.

The next question is, whether a prospective employer to whom an original testimonial or character has been sent has any right to retain it and refuse to send it back to the man from whom it was received? It should be pointed out here that it is an extremely unwise thing to send an original in the first instance, for, apart from any trouble which may arise in getting it back, it may get lost in the post, or lost or destroyed quite accidentally in some other way. However, if an original is sent and is merely a loan of the document, it must be returned and may be demanded. There has been no change of ownership, and the true owner has a right to claim his own property. I would end, however, by again advocating the folly of sending originals, especially unless asked for. A copy is just as good in the first place, if it can be substantiated by the original later. *H. S.*

MESEMBRYANTHEMUM.

(*Continued from p.* 216.)

12A.—DIPLOSOMA, SCHWANTES.

Small, succulent perennials, stemless and deciduous, without evident rootstock, but with numerous short, fibrous roots from a dense cluster of sessile growths. Each growth formed of two opposite leaves, which are both sub-horizontally directed, and shortly and very obliquely united at the base and along the basal part of one margin, with the free parts diverging, soft and pulpy, withering completely away annually. Flowers solitary, terminal, sessile between the bases of the leaves, bractless. Calyx unequally 6–7-lobed. Petals numerous, in two series. Stamens numerous, erect, surrounded by staminodes. Stigmas 7, erect, filiform. Ovary inferior, flat at the top.—Schwantes in *Zeitschr f. Sukkulent*, Vol. II, p. 179 (April, 1926).

Species two, natives of South Africa, the type of the genus being D. retroversum, Schwantes.

The derivation of the name is not stated, but is doubtless from the Greek, *diplos*, double, and *soma*, a body, in allusion to the two-lobed body formed by the partial union of the basal part of two leaves.

The author of this genus has founded it without giving any generic characters or the slightest indication of how it differs from other genera, and evidently he has never seen the plant he founds it upon. But as it is clearly a good genus, I have done the best I can to formulate generic characters for it from Mrs. Bolus' description and figure of the type species, and from a living plant of a second species of which I have not seen flowers. As the description of the flower of both species is very incomplete, and (apart from stating that the cells have no cell-wings and the placentas are on the outer wall) the structure of the fruit is undescribed, its real affinity is not certain, but as in general appearance it more nearly resembles the genus Glottiphyllum than any other at present known, I place it next to that genus, from which the filiform stigmas and the presence of staminodes exclude it.

If I am correct in assuming (as from the evidence I have seen I believe I am) that the leaves of this plant die away annually, it is the third known genus in this group of plants that is known to be deciduous, or in which the leaves die and wither annually, even if they do not fall off, the others being Phyllobolus, N.E. Br., and Dactylopsis, N.E. Br. There are, however, also members of the genera Mesembryanthemum, Delosperma, Psilocaulon and Sceletium in which the leaves die and persist or are deciduous annually; while in one species of Amoebophyllum they persist as spines.

Leaves united at the base on one side for nearly half their length, 3½–4 lines broad, marked with a few pellucid dots.
1, retroversum.

Leaves united at the base on one side for not more than one-quarter of their length, about 3 lines broad, marked with some linear blackish lines. **2, Leipoldtii.**

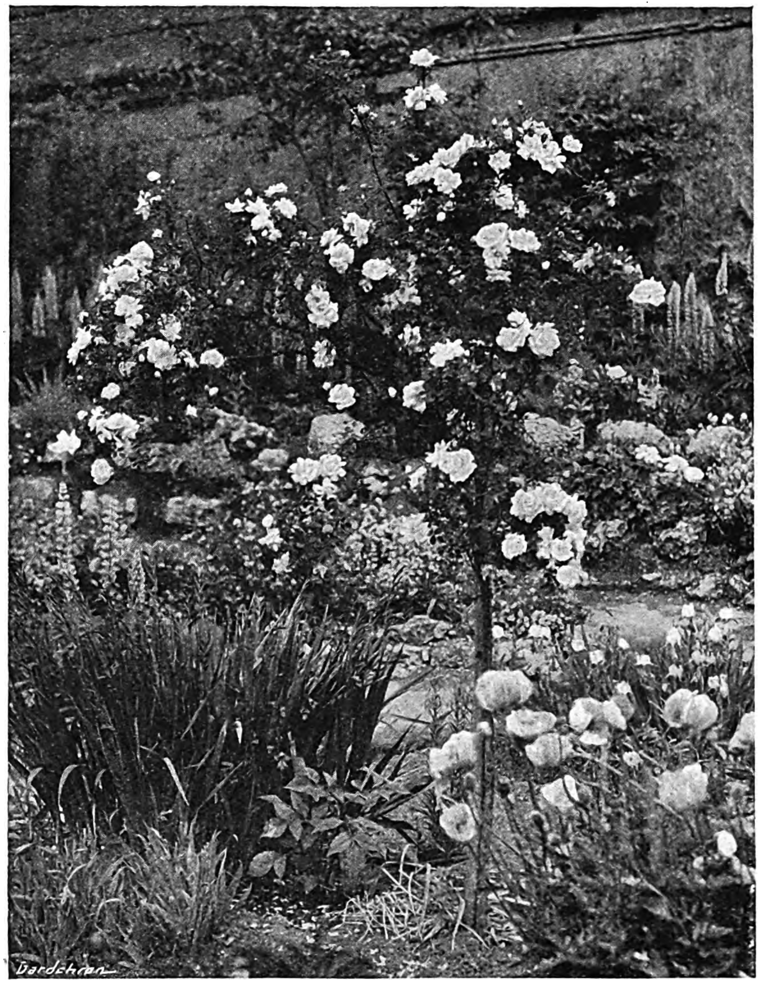


FIG. 123.—ROSA LUTEA HARISSONI.
(see p. 247).

1. D. retroversum, Schwantes, in *Zeitschr. f. Sukkulent*, Vol. II, p. 179 (1926).—Plant scarcely an inch high and as described in the generic characters. Leaves two only to a growth, 9–11 lines long, 3½–4½ lines broad and 2½ lines thick, sub-terete, but slightly concave or flattened on one side, with rounded edges, slightly narrowing to the very obtuse apex, smooth, glabrous, green, with a few scattered pellucid dots. Flowers sessile, solitary, terminal. Calyx unequally 7-lobed (always ?); ovary part depressed, sub-globose, constricted under the lobes, 3½ lines in diameter; the larger lobes about 2½ lines long, acute; the others 1–1½ line long, with broad membranous margins, obtuse. Corolla represented as about 5 lines in diameter; petals numerous, in 2–3 series, 3½ lines long and ½-line broad, linear, acute, rosy-purple. Stamens and staminodes numerous, up to 2 lines long. Stigmas 7, erect, 2 lines long, filiform. Ovary flat and 2 lines in diameter on the top.

Mesembryanthemum retroversum, Kensit in *Trans Roy. Soc. S. Afr.*, Vol. I, p. 150, t. 21, f. A. 1–4 (1909).

Piquetberg Division: Near Endekuil, Pillans 995.

This curious little plant at present seems only to be known from the above description and figure.

2. D. Leipoldtii, L. Bolus, in *South African Gardening*, 1927, p. 238, f. 1, A.—Resembling D. retroversum in general habit, but the unequal leaves are narrower, 8–12 lines long, 2½–3 lines broad and nearly as thick, and are only very shortly united along one margin at the base above the sheath (not for nearly half their length), somewhat semi-terete, concave or flattened on the face, with blunt edges, very obtuse at the apex, slightly twisted, soft and pulpy, smooth, glabrous, green, with a few scattered, short, linear, blackish-green markings. Flower not seen, but according to Mrs. Bolus, solitary, sessile or sub-sessile. Calyx unequally 6-lobed, two of the lobes 5-6 lines long and the other four about 2 lines long, terete. Corolla about 10 lines in diameter. Stigmas represented as 7, subulate, acute, erect. Top of the ovary flat. The cells of the capsule are stated to have no cell-wings, and the placentas on the outer wall. No other details are mentioned or figured.

Piquetberg Division. Between Endekuil and Grey's Pass, Leipoldt and Vaughan!

I received a living specimen of this very remarkable plant from Professor R. H. Compton in 1926, which, when it arrived, was at rest and entirely without any trace of leaves. It consisted merely of a dense cluster of dead sheaths surmounting a mass of short, fibrous roots. After some days, however, it put forth several pairs of leaves as described above which differed distinctly from those (as figured) of D. retroversum, by being more slender, less united at the base, slightly twisted and marked with short, blackish streaks. Neither the twist of the leaf nor the blackish streaks upon it are mentioned by Mrs. Bolus, whether D. retroversum is so marked I do not know, no mention being made of them, but in my experience no other plant in the whole group of genera has such peculiar marks as this species has upon it. They are not the usual dots, but whether idioblasts or not I did not determine, as the plant unfortunately died without flowering; now that it is dead I realise that I killed it by keeping it too dry! It has very short roots and is evidently a surface feeder, obtaining, under natural conditions, sufficient water from the heavy dews to prevent its roots from drying up during the time it is at rest and leafless. When growing and flowering, however, it evidently requires a fair amount of water, and by treating it as I did my species of Conophytum I evidently did not supply it with a sufficient amount, so after a brave struggle it died. Examination after death proved that I had allowed its root-tips to become too dry. From this I infer that its pulpy leaves evaporate much more water than a Conophytum or a Lithops does, and consequently the soil requires to be kept in a moister condition for this Diplosoma during its vegetative period. This experience may be useful to future cultivators who may obtain plants of this singular and interesting species, and I would recommend that the pot be stood in a saucer and watered when required by putting water in the saucer, so that there is always moisture ascending from the lower soil to the roots. *N. E. Brown.*

(*To be continued*).

THE GENUS PRIMULA.

(*Continued from page* 209.)

ANISODORA (Balf. f.). Aniseed-scented P. (Candelabra.)

This species is best treated as a biennial, for it usually dies after having flowered and produced seeds. The leaves are six to eight inches long, narrowly-oblong or broadly-lance-shaped, rounded at the tips, gradually narrowing to a winged stalk; margins sharply serrate; surfaces smooth above and below. Flower stem twelve to thirty-six inches tall, stout, smooth. Flowers nodding in a terminal, interrupted umbel on stalks half-an-inch long. Corolla about three-quarters-of-an-inch across, dark plum-purple outside, red-purple within, with a yellow eye. Segments usually five, somewhat quadrangular; tube cylindrical below and slightly campanulate upwards, three-eighths-of-an-inch long.

Grows in moist, open pastures on the mountains of the Chungtien Plateau in Yunnan, at 11,000 feet above sea-level. Flowers in June and July in cultivation. Introduced in 1913.

Culture: Plant in fibrous loam, peat and sharp grit in an open spot, and treat as a bog plant when in growth. Quite hardy and produces abundant seeds. *Bot. Mag.*, t. 8752.

ANNULATA (Balf. f.). Ringed P. (Yunnanensis.)

A fragile little perennial with a delicate branched root-stock clothed with the dry remains of the foliage of previous seasons. It produces a tiny rosette of downy, broadly spathulate leaves, about five-eighths-of-an-inch long, tapering to a winged stalk, with blunt tips, and margins furnished with large or small, saw-like teeth. The slender, downy flower stem bears a solitary violet blossom about a quarter-of-an-inch across; its tube is cylindrical and distinctly ringed at the mouth; the lobes of the corolla are broadly wedge-shaped and each is deeply cleft into two diverging rounded segments.

Flowers in June. The plant is found growing in loose, mossy soil on a limestone mountain near A-tun-tsu, in north-western Yunnan, at 14,000 feet above sea-level.

Cultivation in limestone chips and light fibrous loam and leaf-soil, in a moist, shady spot, keeping it dry in winter, or growing it in cold frame, is indicated.

APENNINA (Widmr). Apennine P. (Erythrodrosum.)

Perennial of tufted habit, densely clothed with short, coarse, reddish-brown, glandular hairs. Leaves one-and-a-half to two-and-a-half inches long, broadly ovate, blunt, entire or obscurely toothed in the upper half. Flower stem three to five inches tall, stout. Flowers four to eight in an umbel, bright pink. Corolla half to three-quarters-of-an-inch across, divided into fine, broadly ovate, slightly notched lobes; tube cylindrical, rather short. Blossoms in May and June.

Grows in rocky places among dwarf herbage in a few localities on the northern Apennines of Italy.

Culture: Plant in a moist, half-shady spot, in loam, peat and limestone chips, or in a cleft in a limestone rock packed with peat. *A. W. Darnell.*

(*To be continued.*)

SULPHUR.

For many years, Hop-growers and glasshouse-growers have been accustomed to using flowers of sulphur in the belief that other forms of this material would be inferior as a means for controlling certain fungous diseases, such as mould and Tomato mildew. It has been shown, however, by Salmon and Goodwin (*Journal*, Mins. of Agr., No. 8, Vol. 34, Nov., 1927), that this view may now be modified as a result of comparative trials that have been made.

The writer has long held an opinion that certain other forms of sulphur are equal in efficiency to the "flowers" (Fig. 124), but owing to difficulties in application, due to certain physical characteristics, these other varieties of sulphur have been unjustly condemned, and have not received the attention which they deserve.

Generally speaking, the finer the state of sub-division of the particles of a material, the greater the tendency to "ball," which interferes with the proper application and distribution of the dust. One would expect to find that the finer the particles of sulphur, the better the adhesion to the leaf-surfaces and the longer the dust would remain in suspension in the air. This assumption has been justified by the results that we have obtained from a comparison of the physical properties carried out in the laboratory under rigid and standard conditions.

In the United States, these fine, dusting grades of sulphur (Fig. 125) have been used for a considerable number of years, in conjunction with other insecticidal ingredients, such as lead arsenate. In all probability these admixtures have been purposely made, as it is recognised that sulphur particles are very liable to become electrified, which greatly hinders their distribution and causes considerable sticking in the dusting machine. It has been found that by incorporating a suitable "spreader," this electrical property may be overcome or neutralised, thereby facilitating an easy delivery from the machine and an uniform distribution over the foliage. Whilst a sieving test gives some indication of the relative sizes of the particles of a dust it does not necessarily indicate the adhesiveness or floating capacity "in air."

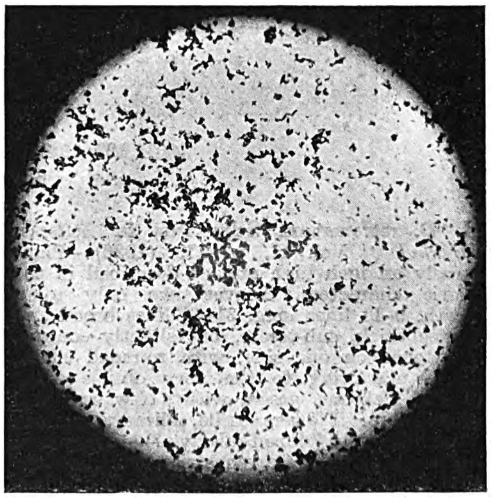


FIG. 124.—FLOWERS OF SULPHUR.
Showing comparative size of particles and their lack of uniformity.

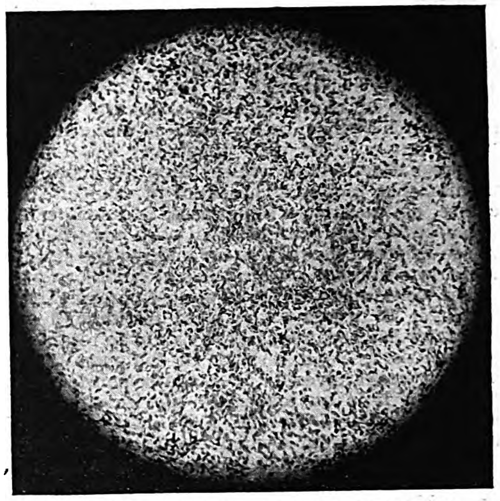


FIG. 125.—SPECIAL DUSTING SULPHUR.
Showing comparative size of particles and their uniformity.

For the successful control of such diseases as mildews, it is important to have the sizes of the sulphur particles of such dimensions that they will remain in aerial suspension for a sufficient length of time under suitable atmospheric conditions to give a complete covering of both the upper and under sides of the foliage. In other words, the sulphur must adhere well and have a good floating capacity.

Below are the results of some tests carried out by the writer on various grades of sulphur.

COMPARISON TESTS.

Sieving Test.—The 300 mesh-to-an-inch sieve is the finest mesh obtainable.

	% passed by 300 mesh.	% passed by 200 mesh.	% passed by 150 mesh.	% retained by 150 mesh.
Flowers of Sulphur ...	60.468	12.116	4.396	23.02
Special Dusting Sulphur (1)	91.516	5.402	3.082	0
Special Dusting Sulphur (2)	93.094	5.508	1.398	0
Other grades of Sulphur "A" ...	88.090	7.918	3.992	0
,, ,, "B" ...	84.304	8.188	7.508	0
,, ,, "C" ...	80.336	14.562	5.102	0

Adhesion Test.—(Using Talc as standard).

Talc	= 100
Flowers of Sulphur	= 123
Special Dusting Sulphur (1) ...	= 165
,, ,, ,, (2) ...	= 179
Other grades of Sulphur "A" ...	= 150
,, ,, "B" ...	= 166
,, ,, "C" ...	= 160

Sedimentation Test.—Which indicates the rate of settling of particles.

	After 15 min. mm.	After 30 min. mm.	After 1 hour. mm.
Flowers of Sulphur	88	66	63
Special Dusting Sulphur (1) ...	265	86	75
,, ,, ... (2) ...	270	95	88
Other grades of Sulphur—"A" ...	170	91	83
,, ,, "B" ...	237	91	81
,, ,, "C" ...	165	83	80

mm.—millimetres.

Floating Capacity (using magnesium oxide as standard).

Magnesium oxide	= 100.0
Flowers of Sulphur ...	= 69.0
Special Dusting Sulphur (1)	= 87.0
,, ,, (2)	= 89.0
Other grades of Sulphur "A"	= 79.0
,, ,, "B"	= 86.5
,, ,, "C"	= 84.5

It will be observed that there appears to be a definite correlation between adhesion, floating capacity, sedimentation and sieving.

It will at once be seen that flowers of sulphur, which only show sixty per cent. passing through a 300-mesh (to-the-inch) sieve, has a decided lower adhesive value as compared with the special dusting sulphur. Also, the floating capacity of the flowers is proportionately lower, which is confirmed by the sedimentation test. From the commercial point of view this means that, providing the sulphur is applied by means of a suitable dusting machine, and under proper climatic conditions, much less should be required to treat an acre as compared with the flowers of sulphur, because much less will fall to the ground.

How Sulphur Acts.

It has been proved that sulphur itself possesses fungicidal properties, and these become more pronounced with increase in temperature and in the presence of sunlight, a fact which probably explains the continued or lasting beneficial results observed following an application of lime-sulphur solution.

Research work at Long Ashton has shown, too, that it is not necessary for the sulphur to be in actual contact with the fungus in order to kill or inhibit the germination of fungus spores; there is evidence that either as a result of the volatilisation of the sulphur or the formation of some volatile compound, a toxic vapour or localised sulphur atmosphere is formed, in close proximity to the leaf surface.

Results indicate that sulphur particles in contact with a fungus spore may be actually dissolved and absorbed by the fungus as a result of a fungal secretion; this, in turn, may possibly form a toxic sulphur compound within the contents of the spore and kill it. *Theodore Parker.*

CULTURAL MEMORANDA.

GREENHOUSE RHODODENDRONS.

These beautiful shrubs are worthy of more general cultivation under glass, for their successful culture is really not so difficult as is generally imagined; in fact, they succeed under much cooler conditions than those usually afforded them.

Greenhouse Rhododendrons may be planted in shallow, well-drained borders in an ordinary greenhouse, where the night temperature does not fall below 45° to 50°.

They may be increased by means of cuttings, which root readily at any time in a close case, with slight bottom-heat.

These subjects are well-adapted for growing in pots, and grow freely in a compost of fibrous peat and sand if potted only moderately firmly; their chief drawback is their straggly habit, which, as a rule, is not corrected by pinching, for only one shoot develops from each stopping. By bending the shoots down, however, and training them round stakes, the lower buds are induced to break, and by this means it is possible to produce well-furnished plants.

Careful watering is essential at all times.

Amongst the hybrid Rhododendrons one should include such varieties as Countess of Sefton, Fosterianum, Lady Mary Fitzwilliam and Countess of Haddington, all of which are attractive when grown either in pots or borders. They are readily propagated by means of cuttings of half-ripened growths, which root freely in a close case.

Lady Mary Fitzwilliam, a deliciously-scented variety, is one of the most useful, for it flowers freely in small pots, and may be grown on into large specimens.

These hybrid Rhododendrons are all of a somewhat straggly habit, but this may be corrected by pruning and training.

Some Rhododendron species, such as R. Edgeworthii, R. formosum, R. Dalhousiae, R. Veitchianum and R. ciliicalyx are well worth growing. *J. C.*

GARDEN MANURES FOR APRIL.

As a result of various experiments, it has been shown that the difficulties brought about by the shortage of farmyard manure may be partly overcome by giving a less than normal application of farmyard or similar manure, and adding a generous dressing of artificials containing nitrogen, phosphorous and potash. For general garden purposes it is not uncommon to apply heavy dressings of farmyard or similar manure, so heavy even as thirty tons or forty tons per acre, but this is by no means necessary, even on the poorer soils, and an application of farmyard or similar manure at the rate of ten tons per acre, supplemented with eight hundredweights to ten hundredweights of artificials in approved ratios, makes a substantial, complete manure dressing, and this system might be followed with considerable advantage in many gardens where bulky manure cannot be obtained in sufficient quantity.

The application of such a relatively small amount as ten tons per acre so as to give the whole area to be cultivated some bulky manure, and supplementing this quantity by artificials, is a much better practice than giving a portion of the area concerned the full standard amount considered necessary, and leaving the remainder to be dressed solely by artificials. By enriching the soil with organic matter an improvement in its physical condition takes place, and bacterial activity is stimulated, which leads to a freer liberation of plant nutrients.

In the production of vegetable crops, bulky manures have been generally favoured in the past, and farmyard manure, lime, guano, bone-meal and soot are still the chief fertilising agents used in many gardens. Even if the supply of these manures does not decrease, there is always a tendency for expanding requirements to create a condition which leads to a shortage of them and the use of commercial artificial fertilisers is being regarded with more favour among gardeners, and to some extent among allotment holders, than was the case a few years ago.

In the cultivation of green crops, such as spring Cabbages, Spinach and Lettuces, where rapid leaf development is essential, the application of a chemical manure like sulphate of ammonia is of great assistance, even on ground which is well supplied with the materials mentioned. Likewise, for root crops, an application of potash salts increases the yield of the crop, particularly on light, sandy soils.

It should be borne in mind that garden culture produces very big crops, consequently the drain on the soil is great, and the necessity for replenishment, constant, and while the use of organic manures has the advantage of simplicity and relative safety, the mineral manures are frequently more easily obtained, and cannot fail to give good results, if reasonable care is taken in their application.

The planting of early and second season Potatos is an important item of current garden work, and manuring is a problem for consideration by many gardeners. It is a mistake to use heavy dressings of fresh farmyard manure for this crop as it engenders soft growth that offers low resistant powers to the attacks of diseases, and produces tubers of indifferent flavour and poor keeping qualities. In cases where the soil already contains a reasonable amount of organic matter, or has had a dressing of a minimum quantity of ten tons per acre of farmyard or similar manure, the following mixture, entirely made up of mineral fertilisers and applied at the time of planting, is quite suitable for general garden use:—Two parts sulphate of ammonia, two parts sulphate of potash, and four parts superphosphate, applied at the rate of from six to eight hundredweights per acre. This mixture, at a total cost of about £3 5s. 0d. per acre for the larger quantity, cannot be considered excessively dear. The substitution of one part of superphosphate for one part of steamed bone-flour would improve the mixture without adding more than a few shillings to the cost. Such a dressing should raise the yield of the crop by at least two or three tons per acre, and would thus represent a substantial profit even with Potatos at abnormally low rates. While the quantity recommended may be considered a good average dressing, it is by no means the maximum amount which may be used profitably. Jersey Potato growers frequently use up to one ton per acre of such a compounded fertiliser, at a cost of from £9 10s. to £10 per acre, yet there is little doubt that the Jersey Potato industry is, on the whole, in a flourishing condition. The actual amount which it is desirable to apply cannot be fixed for every case without studying the particular needs of the soil in question, and therefore every grower should arrange small trial plots, using various quantities of the component parts of the mixture and varying the weight of the amounts supplied, and thus find out for himself what is the maximum amount that he may profitably use on his particular soil. Whatever the quantity decided on, however, it is better to apply it wholly at the time of planting than to apply a part as a top-dressing later. This is of extreme importance in the case of early Potatos, as a highly nitrogenous dressing during growth has a tendency to temporarily delay ripening, and thus retard the crop.

Lawn-mowing is now a regular weekly operation in the garden, and care should be taken that the grass collected from these mowings is methodically treated to produce manure for future use. When properly treated, these mowings make a highly nitrogenous fertilising product of great value for all garden purposes. Lawns which have had dressings of lime and kainit during the autumn and winter months may now receive a dressing of sulphate of ammonia, at the rate of one or one-and-a-half hundredweight per acre. Such a dressing checks in a marked degree the growth of broad-leafed weeds, and encourages the growth of finer grasses. *W. Auton.*

THE GARDEN SLUG.

At the last of the winter series of meetings of the Derbyshire Horticultural Association, held recently, Mr. A. Roebuck, Adviser in Entomology, Midland Agricultural College, gave an interesting lecture on the above subject, and gave some important details of recent experiments dealing with the extermination of this pest.

The lecturer first described its position in the animal world, its descent and connection with water animals; he stated that although the slug is a moisture-loving creature, immense numbers must have been drowned during the floods of the past wet season.

Five species of harmful slugs were exhibited and described: the Field Grey Slug (Agriolimax agrestis), the Garden Slug (Arion hortensis), the Black Slug (Arion ater), the Large Striped Slug (Limax maximus), and the Keeled Slug (Limax Sowerbii).

Growth from the egg stage was dealt with; apparently every slug we meet is an egg-layer of an average of three hundred per annum, for a duration of five years, and each is bisexual. Baby slugs will feed day and night for a period of about three weeks, completely skeletonising leaves, whereas older slugs feed from 10 p.m. to 4 a.m., and consume the whole of the leaves, and may feed below ground to a depth of about five inches.

Results of extensive tests at the College were given, substances producing good results when applied during the day being powdered quick-lime, air-slaked lime, copper sulphate, alum, sulphate of potash, salt and washing soda.

The following were given as the best wet sprays: Bordeaux mixture, copper sulphate, carbolic acid, lime water, washing soda and alum.

At night, stronger solutions are necessary owing to condensation of water on plants; two dustings of quick-lime powder, at half-hour intervals, are necessary to be effective, where one will suffice during the day. Old slugs are most resistant, but the size is no criterion of age, as slugs with plenty of food grow fast.

The best remedy in gardens, among vegetables and flowers, was a spray of a strong solution of alum—1 lb. to one gallon of water, applied late at night when the slugs were feeding. It is non-poisonous and harmless. The old slugs may not be killed outright, but would be so injured that they could be dealt with next morning. Those below the ground could be dealt with by a spray on a subsequent night.

Unfortunately, slugs are able to creep over most injurious substances spread on the soil surface, owing to the slime they exude, and Paris Green, etc., with bran, is often harmful to birds.

NURSERY NOTE.

MESSRS. L. R. RUSSELL, LTD.

As growers and exhibitors of stove and greenhouse plants, the firm of Messrs. L. R. Russell, Ltd., ranks amongst the foremost, so that it is not surprising that a visit to their well-known nurseries at Richmond, even at this season of the year, should disclose numerous plants of rare beauty and interest.

Such was our experience upon visiting the nursery a few days ago, when, under the guidance of Mr. W. Taylor, who has been associated with the nursery for a considerable number of years, and who is a past-master in the cultivation of these subjects, we were able to inspect house upon house of interesting plants, many of which were in their full beauty.

Upon entering the first house, we discovered innumerable Anthuriums, fine specimens of A. crystallinum and its variety longifolium, and A. Veitchii being the most prominent; here also were various beautifully-foliaged Alocasias, such as A. Watsoniana, A. argentea, A. mortefontainensis and A. argyrea. From the roof of this house hung many baskets of Nepenthes, while there were also fine specimens of such subjects as Bertolonia maculata, B. sericea cristata, an exceptionally fine plant with velvety leaves and purple-tinted veins; Heliconia illustris Edward Rex, and Ficus radicans variegata.

Next we came upon large batches of Dracaenas, included amongst which were fine specimens of D. Victoria and the smaller-leaved D. Sanderiana; D. His Majesty, D. Victory and D. Lord Wolseley; while the baskets of the trailing Columnea gloriosa purpurea, with its small, purplish leaves and large orange-scarlet flowers, were especially noticeable.

In the corridor connecting the houses were fine examples of Wistaria sinensis, Azaleas Madame van den Cruyssen, President Oswald de Kerchove, Professor Wolters and J. T. D. Llewellyn; and Franciscea calycina.

The Croton (Codiaeum) house revealed a veritable wealth of colour, there being such a host of varieties that it was well-nigh impossible to decide which were the most striking, but of those which made especial appeal, there were the large-leafed Emperor Alexander III, Juliette Russell, Eugene Draps and Russelliana; of others there were Golden Bracelet, Edmontoniensis and Warrenii.

In the section devoted to Aralias were hosts of specimen plants of A. Veitchii and its variety gracillima, and the beautiful A. elegantissima, while here also we came upon a dainty form of Ficus radicans, termed gracilis variety, and several fine plants of Paullinia thalictrifolia, like a climbing Fern.

The many home-raised seedlings of Cryptanthus, the several species of Aphelandra, Erythroxylon Coca, the quaint Euphorbia splendens, Medinilla Curtisii, with numerous fine, waxy-white flowers; and Phyllanthus roseo-pictus, were merely a few of the plants that demanded attention, and we look forward with pleasure to again visiting this nursery, if only to see the large collection of Caladiums, of which Mr. Taylor spoke with pride.

In so short a note it is only possible to detail a few of the numerous beautifully foliaged and flowered indoor plants, for besides the several subjects mentioned above, there were such gems as Petraea volubilis, Saintpaulia ionantha, various Clerodendrons, Bougainvilleas, Dipladenias, and the extremely attractive Marantas.

HOME CORRESPONDENCE.

[The Editors do not hold themselves responsible for the opinions expressed by correspondents.]

Lime or Chalk.—With reference to the note in your issue of March 10 (p. 180) on the question of "Lime or Chalk," the choice between the application of "quicklime or burnt lime, and "chalk or limestone," appears to lie chiefly in the purpose for which it is required and the particular type of soil. The advantage of quicklime over chalk is that it falls naturally into a fine state of division, and so more easily spreads throughout the soil; when quick-lime is applied to the soil, it first absorbs moisture and becomes "slaked," then it gradually unites with carbon dioxide and reverts to calcium carbonate, $CAO \times CO_2$—$CACO_3$. Until this last change takes place the lime remains caustic, and when in this condition has a more drastic and beneficial effect on soils inclined to be tenacious and acid in character than ordinary chalk applied in small heaps and forked in. On the other hand, if land is of a light nature, sandy for instance, it is generally deficient in organic or vegetable matter, and lime in the form of ground limestone is to be recommended, owing to its milder action on the existing organic matter. It should be remembered that it takes nearly twice the bulk of "ground limestone" to supply the same amount of lime as does quicklime or burnt lime, and the question of transport and handling has to be taken into consideration. Lime acts in a threefold way on soils—chemically, physically and bacteriologically—so it may be seen how necessary it is to give periodical dressings of lime in order to keep up the fertility of the soil. If horticulturists would combine more and buy in truckloads, which could be split up, they would get a much easier price than buying individually in small lots. Any merchant would quote cheaper for truck loads. *Leslie Foader, Miles Hill Mount, Chapel Allerton, Leeds.*

FRUIT GARDEN.

ORIGIN OF COMMERCIAL APPLES.

Most of the Apples known as commercial varieties have no known family origin, having been found in cottage gardens or hedgerows, or in some out-of-the-way place; but what appeals to one is the fact that whilst these varieties have so great a commercial value, the recorded ones have practically none.

The only two valuable sorts of known origin at present are Charles Ross and Rival, these being obtained by crossing Peasgood's Nonesuch with Cox's Orange Pippin; neither of them is so valuable as Cox's Orange Pippin.

The raiser of these two Apples has put on the market over twenty varieties, but not one has come to stay, for nature's spontaneous productions have as yet kept them out.

The aim has been to produce a variety of the flavour of Cox's Orange Pippin, in season from Christmas to the following June, and the method is to use pollen of the "fancy" varieties; so far, endeavours have been in vain, but to my mind the wrong course has been pursued. The system has been to cross "fancy" varieties, but nature resents inter-crossing. If other methods were used, evolutionary, so to speak, I believe the ideal would be obtained.

The pollen of the Crab Apple, used on "fancy" sorts would, no doubt, produce varieties with keeping, and probably utility, qualities.

Cox's Orange Pippin was raised as a chance seedling by Mr. Cox, a retired brewer, of Colnbrook Lawn, near Slough, and introduced to notice by Mr. Turner, a nurseryman, about 1850. Cox's Pomona came from the same source.

Blenheim Orange was raised or found in the garden of G. Kempster, a tailor, of Woodstock, near Blenheim, about 1750.

Bramley's Seedling, found in a cottage garden owned by Mr. Bramley, at Southwell, was introduced in 1876, the grafts being taken from the mother tree, which had withstood the elements for fifty years unnoticed; it is now one of the most desirable varieties.

Newton Wonder was found in Nottinghamshire, and introduced into commerce about 1887; and Annie Elizabeth, a chance seedling found in the garden of a Mr. Greatorex, in the Midland counties, became known in 1868.

Gascoyne's Scarlet Seedling was raised by Mr. Gascoyne, of Bapchild, and is one of the showiest Apples grown; it came on to the market in 1871.

Gloria Mundi, an American variety of over one-hundred years standing, has produced specimens which realised in the open market £16 per fruit, weighing over two pounds; truly a fine production; while Peasgood's Nonesuch is a showy and popular variety, raised by Mrs. Peasgood, in Lincolnshire, from a pip saved after eating an agreeably-flavoured fruit. It was sent out by nurserymen about 1872.

Warner's King, a fine fruiting variety of unknown origin, has been known and grown since 1800, and is a valuable market Apple.

Ribston Pippin, an esteemed variety, is short-lived on some soils, being subject to canker, but planting over a slab of stone or slate sometimes prevents the disease. It was found at Ribston Hall, Knaresborough, although whence the tree came is unknown; it was introduced to commerce in 1785.

Claygate Pearmain, a first-rate dessert Apple, was found in a hedge by Mr. Braddick about 1822; and Worcester Pearmain, a valuable early commercial sort, originated near Worcester, and was sent out in 1874.

Dumelow's Seedling, also known as Wellington or Normanton Wonder, is one of the best late cooking varieties; it is supposed to have been raised by a Mr. Dumelow, and introduced to commerce about the period of the Battle of Waterloo, the first trees being sent out by a small nurseryman living at Normanton. *Pomona.*

VEGETABLE GARDEN.

SKIRRETS.

Sium Sisarum, commonly known as Skirrets, belongs to the Natural Order Umbelliferae. The generic name is derived from the Celtic word *siu*, water, in allusion to their natural habitat.

Skirrets were introduced into England from China in 1648, and a pie made with them was one of the favourite dishes of King Charles I. They were greatly in favour in the seventeenth and eighteenth centuries. In 1682, Worlidge wrote that "Skirrets were the whitest, sweetest, and most pleasant of roots."

The seeds of S. Sisarum, like those of the Parsnip, are rich in oil.

Skirrets are usually treated as annuals, but they are really perennials, and seeds should be sown in April and May, the resultant plants being thinned to about two feet apart.

S. Sisarum is grown for its small, fleshy tubers, which are joined at the crown. These should be boiled and served with a white sauce or added to meat pies, stews, ragouts and hot-pot.

SORREL.

Rumex Acetosa is rarely grown in British gardens, although it is both healthy and delicious, whether cooked like Spinach or eaten raw as a salad. Moreover, it produces leaves during the greater part of the year, and is therefore invaluable for early winter.

The seeds may be sown from February to May to produce a crop for autumn use, and the leaves should be constantly cut, as they are only eatable when young and tender. In subsequent years the plants may be divided in autumn and spring.

R. Acetosa is found in every French garden and is very often used as a border in the kitchen garden. *V. Slade.*

SOCIETIES.

GLASGOW SPRING SHOW.

THE annual spring show, promoted by Messrs. Austin and McAslan, was held recently in the McLellan Galleries, and was largely attended by the general public. Inaugurated in 1926, for the purpose of encouraging the cultivation of bulbs among amateurs, the enterprise has received increasing support, and on this occasion the number of entries in the competitive section showed a great advance on former years, while the exhibits from private gardens in the west of Scotland were also more numerous.

LADY MUIR, Deanston House (gr. Mr. W. McCarroll), staged an attractive exhibit consisting of a group of Begonia Gloire de Sceaux, bordered with Begonia Mrs. Peterson, which has pretty rose flowers and copper-coloured foliage. These were flanked by Cyclamen Firefly, while a massive edging was formed of well-grown specimens of Primula obconica.

Mr. J. COWAN, gardener to Lt.-Col. Norman Kennedy, provided a typical spring display of Polyanthuses and blue and mauve Primroses, surrounded by a turf edging, and a large, circular group of Primula obconica from the gardens of Sir WILLIAM HOULDSWORTH, provided a bright and pleasing colour display.

Sir JOHN REID (gr. Mr. J. Davidson), staged a collection of thirty-two varieties of Daffodils, of which Queen Bess, Ellen Terry, Sassenheim, Duchess of Westminster and Glory of Noordwiyk were the most prominent. Cinerarias and Azaleas were exhibited by Sir A. B. CAYZER and the exhibit of Mr. J. R. RICHMOND was notable for a collection of Daffodils, of which Olympia, Weardale Perfection, Tresserve, King Alfred, Bath's Flame, Sunrise and Van Waveren's Giant were outstanding. Tulips, Hyacinths, Freesias, Primulas and Iris tingitana were also included in this exhibit.

Mrs. STEWART PATON staged a choice collection of Daffodils.

The feature of the show was a spring garden on a turfed bank, the work of Messrs. AUSTIN AND McASLAN's landscape gardening department. Varieties of Japanese Azaleas, including Amoena and Kurume, Prunus triloba, Cytisuses, Laburnums, Cerasuses and Rhododendrons, were introduced into the scheme in the form of irregular beds and groups, while drifts of Narcissi, including King Alfred, Queen of Spain, Mrs. Milner and Southern Gem, together with Crocuses, occupied the lower levels of the exhibit. The Rhododendrons included fine specimens of Souvenir de Anthony Waterer, Purple Splendour, Mrs. Kendrick, G. S. Sims, Cleopatra, Cynthia and Doncaster. Spruce trees formed the background.

At the other end of the hall a collection of alpines in pans and pots, grown under cool conditions at the Cathcart Nursery, attracted the attention of rock garden enthusiasts, and the centre of the floor was occupied by a massive bed of Azalea indica in variety.

Obituary.

William Merchant.—We have to record the demise of Mr. William Merchant, of Lancaster Road, New Barnet, Hertfordshire, at the advanced age of seventy-seven years, which occurred at the Wellhouse Hospital, Barnet. Coming from Cirencester many years ago to New Barnet, he soon became a well-known personality in the district, being an active member and committeeman of the local Conservative Association, and connected with various sports' associations of the locality. Himself a gardener, some years ago he successfully organised a gardeners' dinner over which Col. Bowles, M.P., presided. Speaking in the House of Commons a few days later, Col. Bowles made special reference to this unique function. The deceased had been married twice, and was at the time of his death a widower. He leaves a large family and fifty grandchildren.

NEW HORTICULTURAL INVENTIONS.

THESE particulars of New Patents, of interest to readers, have been selected from the Official Journal of Patents, and are published by permission of the Controller of H.M. Stationery Office.

LATEST PATENT APPLICATIONS.

6,970.—Cochrane, D. R.—Means for constructing frames, etc., for garden plants, etc. March 6.

6,899.—Frederiksen, V. Erhard.—Agricultural implements. March 5.

7,496.—I. G. Farbenindustrie Akt.-Ges.—Production of fertilisers. March 10.

7,030.—Lord, A. F.—Watering-cans. March 6.

6,933.—Weerasinghe, B. E. — Supports for flowers, etc. March 6.

SPECIFICATIONS PUBLISHED.

286,407.—Garrett, B. G., and Garrett and Sons, Ltd., G. J.—Cultivators, harrows or hoes.

286,444.—Falconer, D.—Ploughs.

285,515.—Savage, J. C.—Treatment of growing plants and other like purposes.

285,518.—Jones, J.—Beetroot and like cleaners.

285,702.—Lubke, M.—Tables for sorting seeds.

Printed copies of the full Published Specifications may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at the uniform price of 1s. each.

THE LATEST TRADE MARKS.

THIS list of Trade Marks, of interest to readers, has been selected from the Official Trade Marks Journal, and is published by permission of the Controller of H.M. Stationery Office.

ELFIN.

486,837.—Machines, in Class 6, for peeling, coring and slicing fruits and vegetables.—The South British Manufacturing Company, Limited, 97, Clerkenwell Road, London, E.C.1. March 14.

PETROLIC.

486,305.—Tubular hose.—The Leyland and Birmingham Rubber Company, Limited, 24 to 30, Duke Street, Aldgate, London, E.C.3. March 14.

APEX.

487,998.—Tubular Hose.—The British Hose and Appliance, Company, Limited, 103, Church Street, Pendleton, Manchester. March 14.

FIRMATE.

486,337.—Sand specially prepared for horticultural purposes for use on turf and lawns.—Hilton Gravel, Limited, Blakelow, Sutton Lane, Hilton, Derbyshire. February 22.

ANSWERS TO CORRESPONDENTS.

FLANNEL WEED IN LILY POND.—*J. K.* From experiments, it has been found that one pound of copper sulphate is enough to use in a pond containing 100,000 gallons of water. That would mean one ounce to 6,250 gallons. Two-and-a-half ounces to 10,000 gallons would mean one ounce to 4,000 gallons, which would be rather too strong for the Water Lilies. We suggest one-and-a-half ounce to the 10,000 gallons, and this would mean one ounce to 6,666 gallons, in round figures. This would be a little weaker than one ounce to 6,250 gallons, but it would be on the safe side for the Water Lilies. Most likely the Flannel Weed is a species of Vaucheria, which is a very strong-growing Algae, and difficult to eradicate, because many pieces may be attached to the mud and escape. The copper sulphate should be powdered, placed in a thin bag and drawn over the surface of the water at short intervals till it is dissolved. It should be repeated once or twice during the season. This weed will grow in perfectly clean spring water. Some gardeners make a point of raking it out at frequent intervals during the growing season.

GARDENER'S NOTICE.—*R. T.* The question turns on the exact terms arranged when you were engaged and whether there was any definite agreement for a definite increase in your wages at the end of three months. As, however, you gave notice at the beginning of the fourth month you can hardly expect your employer to give an increase which apparently was dependent on your being found suitable

GRUBS ON GOLF LINKS.—*W. B.* The creatures you sent were dead and quite shrivelled up by the time they reached us, but they appear to be the larvae of a very small beetle, and we do not think you need be at all apprehensive that they will cause any damage to the greens. You may therefore allow nature to take her course in this case, but if there should be a plague of small beetles later on, and you will send us some specimens in a small tightly-fitting tin box, we will look into the matter further.

NAMES OF PLANTS.—*W. K.* 1, Abutilon Savitzii; 2, a garden variety of Abutilon; 3, Abutilon megapotamicum variegatum.—*E. E. B.*—Probably Daphne pontica; a specimen should be sent when in flower.—*J. P.* Cornus Mas.—*A. S.* Leathery-leaved shrub, Skimmia japonica; yellow-flowered plant, Acacia armata; herbaceous plant, Pulmonaria saccharata; white-flowered shrub, probably Spiraea arguta.—*A. E. T.* 1, Dendrobium primulinum; 2, Coelogyne fuscescens; 3, 5, 6, 7 and 8, send when in flower; 4, a Dendrobium of the nobile group; 9, Rhododendron Lady Alice Fitzwilliam; 10, R. ciliatum; 11, Forsythia suspensa; 12, Skimmia japonica.—*J. S.* Rhododendron phoeniceum var. calycinum (Azalea Oomurasaki).—*T. R.* Bilbergia nutans, a native of Brazil.—*R. U. H. B.* Pulmonaria officinalis.—*A. B.* Chionodoxa Luciliae gigantea.—*Weeds.* 1, Ranunculus Ficaria; 2, Petasites niveus.—*E. R.* Anemone hepatica.

NARCISSUS FLOWERS DAMAGED.—*T. F. W.* The flowers sent appear to have suffered from inclement weather conditions and seem to have been knocked about a good deal by adjacent shrubs.

TULIP PRIDE OF HAARLEM.—*E. H. T.* The flower sent was not only green, but consisted of an extra number of parts. It had eight parts to the perianth or flower, instead of six; seven stamens, or one too many; and four parts to the seed-vessel, instead of three. It might be described as semi-double. but this is not natural for Pride of Haarlem. The parts of the flower are green, because they are on the way to become ordinary leaves. The soil has received too much nitrogenous manure, either farmyard manure for previous occupants of the bed, a fresh application of that in autumn, or the nitrogen may have been applied in the form of sulphate of ammonia, nitrate of soda, or in some fertiliser containing far too much nitrogen for bulbs. Judging from the above explanation, you may arrive at the unsuitable manure employed. Nitrogen encourages leaves, stems and greenness, not coloured flowers. We have seen the flowers of Rose William Allen Richardson turned green as a result of the excessive use of farmyard manure. If it is desired to assist the flowers of hardy bulbs to grow large, more suitable artificial manures are one ounce of superphosphate of lime and half-an-ounce of sulphate of potash to the square yard when the leaves are coming through the soil. This amount may be repeated late in February or early in March, or any time in March for May-flowering Tulips.

Communications Received. — W. P.—J. D.—G. H.—J. C.—C. R.—J. F.—W. E. W.—J. W. B. H.—R. H. C.—A. McC.—F. B.—W. H. E.—Mrs. H.—M. W.—C. H. G.—A. G.—C. L. W. J.—R. F.—G. T.—F. V.—J. R.—G. M.—F. J.—A. G.—E. B.—W. J. F.—W. I.—H. W. A.—J. W. M.—J. G. E.—W. B.

MARKETS.

COVENT GARDEN, Tuesday, April 3rd, 1928.

We cannot accept any responsibility for the subjoined reports. They are furnished to us regularly every Tuesday by the kindness of several of the principal salesmen, who are responsible for the quotations. It must be remembered that these quotations do not represent the prices on any particular day, but only the general average for the week preceding the date of our report. The prices depend upon the quality of the samples, the way in which they are packed, the supply in the market and the demand, and they may fluctuate, not only from day to day, but occasionally several times in the day.—Eds.

Plants in Pots, etc.: Average Wholesale Prices.

(All 48's except where otherwise stated).

	s. d. s. d.
Acacia Drummondi, 48's, per doz.	18 0-24 0
Adiantum cuneatum, per doz.	12 0-15 0
—elegans	12 0-15 0
Aralia Sieboldii	9 0-10 0
Araucarias, per doz.	30 0-40 0
Asparagus plumosus	12 0-18 0
—Sprengeri	12 0-18 0
Aspidistra, green	16 0-60 0
Asplenium, doz.	12 0-18 0
—32's	24 0-30 0
—nidus	12 0-15 0
Azaleas, various, 48's, 32's, per doz.	30 0-48 0
— — 60's, per doz.	15 0-21 0
Boronia megastigma, 48's, per doz.	18 0-24 0
Cacti, per tray, 12's, 15's	5 0—7 0
Cinerarias	15 0-18 0
Crotons, doz.	30 0-45 0
Crytomiums	10 0-25 0
Cyclamens, 48's, per doz.	15 0-21 0
Daffodils, 48's, per doz.	9 0-12 0
Erica melanthora, 48's, per doz.	27 0-30 0
Erica Wilmoreana, per doz.	27 0-30 0
Genistas, 48's, per doz.	15 0-18 0
Hyacinths, 3's, per doz.	18 0-21 0
—60's, per doz.	8 0—9 0
Marguerites, 48's, per doz.	18 0-21 0
Nephrolepis in variety	12 0-18 0
—32's	24 0-36 0
Palms, Kentia	30 0-48 0
—60's	15 0-18 0
Primula malacoides	8 0-10 0
Pteris in variety	10 0-15 0
—large, 60's	5 0—6 0
—small	4 0—5 0
—72's, per tray of 15's	2 6—3 0
Spiraea, white, 48's, per doz.	18 0-21 0
—pink, per doz.	21 0-24 0

Cut Flowers, etc.: Average Wholesale Prices.

	s. d. s. d.
Adiantum decorum, doz. bun.	15 0-18 0
—cuneatum, per doz. bun.	10 0-12 0
Anemones, St. Brigid, per doz. bun.	4 0—5 0
Arums (Richardia), per doz. blooms	9 0-12 0
Asparagus plumosus, per bun. long trails	2 6—3 6
—med. sprays	2 0—2 6
short „	— 1 0
—Sprengeri, bun. long sprays	2 0—2 6
med. „	1 0—1 6
short „	0 6—1 9
Azalea, white, per doz. bun.	6 0—7 0
Camellias, 12's or 18's, per box	3 0—3 6
Carnations, per doz. blooms	3 6—6 0
Croton leaves, per doz.	1 9—2 6
Daffodils, per doz. bun.—	
—Emperor	4 0—5 0
—Princeps	2 6—3 0
—Sir Watkin	3 0—4 0
—King Alfred	8 0-10 0
—Victoria	4 0—5 0
—Barrii conspicuus	3 6—4 0
—Empress	3 6—4 0
Fern, French, per doz. bun.	10 0-12 0
Forget-me-nots, per doz. bun.	8 0-10 0
Freesia, white, ordinary	2 6—3 6
Heather, white, per doz. bun.	— 12 0
Hsyacinths, large white, per doz. pikes	3 0-4 0
Iris, per doz. blooms—	
—blue	3 0—4 0
—white	3 0—3 6
—yellow	2 6—3 0
—mauve	2 0—2 6
Lilac, white, per doz. sprays	6 0—9 0
—mauve, per doz. spikes	6 0—9 0
Lilium longiflorum, long, per bun.	4 6—5 0
— — short, doz. blooms	4 0—5 0
Lily-of-the-Valley, per doz. bun.	24 0-36 0
Marigolds, per doz. bun.	3 0—4 0
Myrtle, green, per doz. bun.	1 6—2 6
Narcissus Ornatus, per doz. bun.	4 0—8 0
—Grand Primo, per doz. bun.	3 6—4 0
—Elvira, per doz. bun.	6 0—8 0
—Flame, per doz. bun.	7 0—8 0
—Koster, per doz. bun.	5 0—6 0
—Poetaz, per doz. bun.	5 0—6 0
—choice varieties	8 0-10 0
Orchids, per doz.	
—Cattleyas	21 0-30 0
—Cypripediums	8 0-10 0
Primroses, per doz. bun.	1 6—2 0
Roses, per doz. blooms—	
—Butterfly	5 0—7 0
—Columbia	5 0—7 0
—Golden Ophelia	5 0—6 0
—Richmond	3 6—5 0
—Aaron Ward	4 0—6 0
—Roselandia	4 0—6 0
—Hoosier Beauty	5 0—6 0
—Molly Crawford	4 0—6 0
Sweet Peas, various, per doz. bun.	6 0-10 0

Cut Flowers, etc.—cont.

	s. d. s. d.
Smilax, per doz. trails	5 0—6 0
Tulips, per doz. bun.—	
— single, white	24 0-30 0
— — red	18 0-21 0
— — pink	18 0-24 0
— — mauve	21 0-24 0
—double varieties	24 0-30 0
—Darwins, pink	24 0-30 0
— — red	24 0-30 0
— — yellow	27 0-30 0
Violets, per doz. bun.	2 0—4 0
Wallflowers, per doz. bun.	4 6—8 0
French flowers—	
—Allium (Star), per doz. bun.	2 6—3 0
—Anemone, De Caen, doz. bun.	5 0—6 0
— — blue, per doz. bun.	2 6—3 0
— — double pink, per doz. bun.	2 6—3 0
—Marigolds, per doz. bun.	4 0—4 6
—Stock, double white, per doz. bun.	4 0—4 6
—Violets, Parma, double, per bun.	2 6—3 0
— — single, doz. bun.	2 6—4 0

Remarks.—Business should be very active in this department during this week for the Easter festivities, when the requirements are considered to be the largest of the season. All Liliums and other white blooms will no doubt advance in price before the week-end, as also will Carnations and Roses, and it is difficult to give a correct quotation of rates. All Tulips, Daffodils and Narcissus should meet with a good demand. Irises are receiving more attention and they are gradually improving in quality, while more Sweet Peas are coming to hand from home-growers. There do not appear to be any new lines to record this week. In the foliage department Smilax, Asparagus plumosus, A. Sprengeri and Maidenhair Fern will be the chief requirements for decorative purposes; the supplies of Smilax have been limited somewhat during the past week, owing to the uncertain arrivals from Guernsey.

Vegetables: Average Wholesale Prices.

	s. d. s. d.
Asparagus,	
—Lauris	4 0—6 0
—Giant	15 0-20 0
—Sprue	1 6—2 0
—Cavaillon	8 6—4 0
Beans, Madeira, per box	6 0-10 0
—Guernsey, finest, per lb.	2 0—3 0
—Worthing	2 0—3 0
Beets	5 0—6 0
Carrots, New, doz. bun.	6 9-9 0
Cauliflowers, French, per crate	6 0—8 0
—Cornish	10 0-12 0
Celery (washed), per doz. fans	1 6—2 0
Chicory, per lb.	0 5—0 6
Cucumbers, doz.	3 0—6 0
Endive, French	4 0—5 0
Leeks, per doz.	2 0—2 6
Lettuce, English	1 6—2 0
—French, round, per doz.	2 0—2 6
Mint, forced, per doz. bun.	4 0—8 0
Mushrooms—	
—Cups	2 0—3 0
—Broilers	1 6—1 9
Onions—	
—Dutch	16 0-18 0
—Spanish	20 0-22 6
Parsnips, cwt.	5 0—6 0
Peas, Guernsey, per lb.	2 0—3 0
Potatos—	
—English, cwt.	7 6-10 0
—Guernsey, new, per lb.	0 5—0 6
—Azores, new	10 0-16 0
—Canary	14 0-17 0
Tomatos, Canary Islands	15 0-20 0
—English, per lb.	2 6—3 6
Turnips, per cwt.	6 0—7 0
—New, doz. bun.	8 0—9 0

Fruit: Average Wholesale Prices.

	s. d. s. d.
Apples, English—	
—Lane's	6 0-12 0
—Bramley's Seedling	8 0-16 0
Apples—	
—Newtowns	14 0-16 0
—Winesaps	12 0-14 0
Apples, New Zealand—	
—Cox's	20 0-22 6
—Worcesters	15 0-16 0
—London Pippin	14 0-16 0
—Alfriston	14 0-16 0
—Dunn's	14 0-16 0
Apples—Nova Scotian—	
—Ben Davis	17 0-20 0
Bananas	14 0-23 0
Grape Fruit—	
—Blue Goose	— 35 0
—Jamaica	— 30 0
Lemons, Messina and Palermo, per case	14 0-25 0
—boxes	11 0-15 0
Oranges, per case—	
—Valencia and Denia, per case	18 0-35 0
—Almeria	20 0-32 6
—Jaffa	18 0-21 0
Strawberries, per lb.	15 0-25 0
South African Fruits—	
Grapes—	
—Waltham X	10 0-15 0
—Colmar	10 0-13 6
—Rosaki	10 0-13 0
—White Hannepoot	10 0-15 0
—Red Hannepoot	8 0-15 0
Peaches, tray	— 10 0
Pears—	
—Beurré Hardy	5 0—9 0
—Beurré Bosc	4 0—7 0
—Beurré Superfin	4 0—8 0
—Beurré Diel	3 6—6 0
—Doyenné du Comice, per doz.	5 0—8 0
—Louise Bonne	4 0—7 0
Pineapples, per case	14 0-23 0
Plums—	
—Kelsey	5 0-10 0

Remarks.—If weather conditions are at all fair, business should be brisk during the next few days. Activity in most sections is already noticeable. Cape fruits, consisting mainly of Grapes, Pears and Plums are selling well, and quantities are heavy. Australasian Apples are now available and are generally in good condition. The Cox's Orange Pippins show signs of bitter pit in some instances, but selling levels are good all round. There are still moderate supplies of well-stored English Bramley's Seedling on offer, and in every case where the produce is well-packed they sell freely at firm prices. Forced Rhubarb is plentiful and cheap, and supplies of "natural" Rhubarb are ample. The Cucumber trade is fairly good, and a large quantity of English and Guernsey Tomatos is now available. Forced Beans maintain a steady price in face of the competition of Beans from Madeira; Guernsey is also sending hothouse Potatos and Peas, which are securing moderate prices. New Potatos are arriving from the Canary Islands, Azores and Algeria, and the first of the Spanish crop arrived a few days ago. Mushrooms show little or no fluctuation either in supply or demand. Salads should sell freely for the holiday trade, the supplies coming mainly from France. Cauliflowers are quoted at lower prices, but the level is still satisfactory from a producer's view point, and green vegetables, although still on the scarce side, are also cheaper; the trade in old Potatos shows little change in spite of increasing supplies of new Potatos.

GLASGOW.

The tone of the cut flower market was rather firmer last week, and prices of Tulips in particular made a further recovery. Princess Elizabeth, Bartigon and Le Notre were worth 8d. to 1s.; William Copland, 6d. to 10d.; Louisante, 8d. to 10d.; Murillo, 7d. to 9d.; Cullinau, 6d. to 8d.; Prince of Austria, Lucretia and La Reine, 5d. to 8d. Daffodils grown out-of-doors were cheap at 2s. per dozen bunches; Ornatus, Grand Primo, 2s. to 2s. 6d.; Golden Spur, 1s. to 1s. 6d.; and Sir Watkin, 1s. 6d. to 2s. Blue Irises were scarce at 4s. per dozen, and yellow Irises were plentiful at 2s. 6d. White Chrysanthemums sold at 2s. 6d. to 3s.; Carnations, 2s. 6d. to 3s. 6d.; pink Roses, 5s. to 8s.; red and white Roses, 2s. 6d. to 4s.; Anemones, 3s. to 4s.; Arums (Richardias), 4s. to 5s.; Lilium longiflorum, 3s. 6d. to 4s. per bunch; Lily-of-the-Valley, 2s. 6d. to 3s.; Lilac, 1s. 6d.; English Violets, 6d. to 9d.; and Wallflower plants, 1s. 6d. per dozen.

Business in the fruit market was very quiet, and any movement in values was generally in an upward direction. Jaffa Oranges advanced to 22s. per case; Valencia 300's and 240's, 19s. to 24s.; 360's and 504's, 17s. 6d. to 20s.; Porto Rico Grape Fruit, 28s. for 96 and 112 counts; and California Grape Fruit, 30s. to 32s. Supplies of Apples were smaller, and Albemarle Pippins ranged from 45s. to 60s. per barrel; Ben Davis, No. 1, 24s; Newtown. Pippins, 16s. to 19s. per case; and Winesap, 13s. to 17s. South African Pears, Grapes and Plums remained unchanged.

In the vegetable section consignments of Cauliflowers. continued on a liberal scale, and the price declined to 5s. 6d. per dozen. Teneriffe Potatos were 6s. cheaper at 17s. to 18s. per case; Cucumbers remained steady at 6s. to 9s. per dozen; Lettuces, 2s. 6d. to 4s.; Carrots and Turnips, 1s. to 1s. 3d. per bunch. Mushrooms, 1s. per lb.; Salads, 2s. 6d per dozen; Syboes, 6d. to 7d. per bunch; and Rhubarb, 40s. per cwt.

TRADE NOTES.

Patents and Trade Marks.—Any of our readers requiring information and advice respecting Patents, Trade Marks or Designs, should apply to Messrs. Rayner and Co., Patent Agent, of 5, Chancery Lane, London, who will give free advice to readers mentioning *The Gardeners' Chronicle*.

We have recently received a new type of flower pot, patented by Mr. R. E. A. Darrington, of 15, Richmond Road, Lake House Road, Wanstead, E., the feature of which is a reversible disk which covers the base of the pot, and is claimed to do away with the necessity of crocking. One surface of the disk is fluted to allow of the exit of the superfluous moisture, while for moisture-loving plants it is suggested that the flat side of the disk should be placed downwards to prevent the escape of water. Other points that are suggested in its favour are that perfect drainage is assured at any angle; that transplanting is made easy, and root disturbance avoided owing to the absence of crocks; and several minor advantages which might appeal to the amateur who delights in novelties of this description. We doubt whether it will ever oust the standard flower pot.

GARDENING APPOINTMENT.

Mr. C. E. Foxon, for the past five years Foreman at Stapleford Park, Melton Mowbray, as Gardener to Captain Gerard Leigh, Thorpe-Satchville Hall, Melton Mowbray.

CATALOGUES RECEIVED.

Sunningdale Nurseries, Windlesham.—Nursery Stock.
Perry's Hardy Plant Farm, Enfield. Middlesex.—Water Plants.
Quarry Orchard, Clears. Reigate, Surrey.—Rock plants.
Clibrans, Ltd., Altrincham.—Dahlias: bedding plants; indoor plants.
Ramsay's Nurseries, Ballsbridge, Dublin.—Hardy plants.

THE Gardeners' Chronicle

No. 2155.—SATURDAY, APRIL 14, 1928.

CONTENTS.

Alpine garden—
  Morisia hypogaea ... 263
  Phlox divaricata var. Laphami... ... 263
  Waldsteinia geoides 263
Easter holidays ... 257
Edinburgh, notes from 264
Fertilisers for fruit trees 257
Fruit garden—
  Large Gooseberries 268
"Gardeners' Chronicle" seventy-five years ago 259
Hampton Court at Easter 258
Helianthemums ... 262
Indoor plants—
  Gardenia Stanleyana 262
  Hippeastrums ... 262
  Perpetual-flowering Carnations ... 262
Kirstenbosch 250
Krelage building at Haarlem 257
Leeds Paxton Society 258
Lime or chalk ... 267
Mesembryanthemum ... 266
Millipedes, experiments with... 268
Monro, Mr. G.... ... 258
Obituary—
  Grant, John ... 272
  Siehe, W. 272
Orchid notes and gleanings—
  Dendrobium infundibulum 263
Primula, the genus ... 267
Societies—
  Paisley Florists' ... 271
  Salisbury Gardeners' 272
  Reading Gardeners' 271
  Royal Horticultural 269
  Tamar Valley ... 269
  Kilmarnock Bulb Show 271
  Instow Spring Flower Show 271
Strawberry, disease, Lanarkshire ... 268
Trees and shrubs—
  Camellia japonica... 266
  Large-flowered Clematises 266
Vegetable Garden—
  The edible Ice Plant 269
Week's work, the ... 260
Wiggie... 264

ILLUSTRATIONS.

Monro, Mr. George, portrait of 258
Phlox divaricata var. Laphami 263
Sterropetalum Pillansii 266
Tamar Valley Show, exhibit at 269
Wiggie : views in the gardens at, ... 259, 261, 264, 265

Average Mean Temperature for the ensuing week deduced from observations during the last fifty years at Greenwich, 48.1°

Actual Temperature.—

The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London, Wednesday, April 11, 10 a.m. Bar. 29.6. Temp. 54°. Weather, Fine.

Fertilisers for Fruit Trees.

Anyone who reflects on the unsolved problems of cultivation will find his time very fully occupied. Just now, for example, when—it may be as a result of the sharp spells of frost during the winter—the earliest flowering Plums are garlanded with blossom, the questions that force themselves on the mind are whether all this lavish display means a heavy toll on the material resources of the tree or whether all this blossom is produced solely from the common, plentiful materials which the plant made and stored during past seasons. The old generation of botanists used to talk about flower-forming stuff, suggesting thereby that blossom is not merely a manifestation of the plant's consummate art in weaving, but a sign also that special materials are required to produce those silky petals and other parts of the perfect flower. Even to-day, when our knowledge of the cultivation of lesser things has increased greatly, the problem of the use of fertilisers for fruit trees is by no means solved. Recent investigators claim to have shown that the production of fruit buds—and hence of blossom and of fruit—is determined by the ratio or balance between carbohydrates and nitrogen in the tissue of spurs and buds. It may be so; but how to regulate that balance with any degree of certainty still remains unknown. It is, of course, evident that cultivation accompanied by the proper use of fertilisers should result in a healthy, vigorous and productive tree, one which bears fruits copiously and regularly and just enough wood to bear easily the burden of the fruits, and leafage adequate to obtain from the air the carbon dioxide out of which the sugar and starches, which all trees must have, are made. Evidence is forthcoming that fertilisers can be made to play an important part in producing the perfect, that is to say, uniformly productive fruit tree. Our research stations have demonstrated that certain maladies, as for instance, Leaf Scorch of Apples, may be prevented altogether by providing a properly balanced mineral ration. Given nitrogenous fertilisers only, the Apples may show much scorch, the leaves burned and the growth of the fruit arrested. Balance up the nitrogen with sufficient potash, and the disease disappears as though by magic. On the other hand, the energetic Orange growers of California have reached a conclusion that the only fertiliser that crop requires is a nitrogenous fertiliser. But again, in the Orange groves of Palestine where even larger crops are produced than in California, it is the practice of the best growers to make liberal use of artificial fertilisers containing all three ingredients—nitrogen, potash and phosphates. Who shall say which practice is correct, or whether both are right for the particular conditions which obtain in the respective countries? In most warm parts of the world the Olive flourishes and yields its fruits without any fertiliser. The Arab beats down the fruits every year, detaching both Olives and fruit buds in the process, and apparently as a result converts the Olive into a biennial bearer. The more progressive Spaniard has abandoned this severe treatment. He gathers his fruits and applies about the roots of the trees liberal quantities of sulphate of ammonia. He claims thereby to make the Olive an annual bearer instead of a biennial one, and at the same time to increase the annual yield of fruits. The most heavily fertilised crop in the world is probably the Date, in the Basra regions of Iraq. Upwards of £1,000,000 worth of these fruits is exported every year, and every year, so far as the supplies go, a rich organic fertiliser is dug in about each tree, and the Arab cultivator knows that the cost of the treatment, £30 an acre, is amply repaid by the increased yield of fruits. Our present uncertain knowledge will, it may be hoped, be made simple, and the routine method of fertilising our fruit trees be made clear by the experiments now in progress at East Malling and Long Ashton Research Stations. It is greatly to be hoped that this will be the case, both in the interests of private growers and in those of the very large and always increasing number of growers of fruits for market in this country. This knowledge, however, cannot be of very quick acquisition, for the effects due to one season's treatment may not become apparent until a later season, and therefore we must have patience and not expect the clear guidance we are looking for until after the experiments have been in existence for a certain number of years.

Easter Holidays. — Fortunately, over the greater part of the country the weather was fine and quite warm during the Easter vacation, consequently hundreds of thousands of people took advantage of the sunshine to spend their holidays out-of-doors. The railway companies report the conveyance of an unusually large number of passengers to sea-side resorts, especially those along the south coast, where, in many instances, bathing was indulged in. A large contingent of Londoners spent the holidays on or beside the Thames. The Terrace Gardens at Windsor Castle were opened to the public on Easter Sunday afternoon, when about five thousand people took advantage of the opportunity thus afforded them. Many thousands of people visited the Royal Botanic Gardens, Kew, on Easter Monday, and about fifteen thousand visited Hampton Court and Bushey Park, while more than ninety thousand went to see the animals in the Zoological Society's Gardens in Regent's Park. Epping Forest, Burnham Beeches, Box Hill and all the London Parks also attracted large numbers. The countryside was looking particularly attractive throughout the Easter holidays, Plum trees and Pear trees being in full bloom, and Cherries just bursting into blossom, while Daffodils and Primroses were plentiful in many districts. It is an interesting fact that although Easter is a variable feast, so far as date is concerned, the weather is usually fine, indeed, one correspondent to *The Times* has kept records for about sixty years, and states that during that period she has only recorded one wet Easter Monday and fourteen showery ones. Since 1923, the temperature during the Easter holidays has been above the normal for the time of year in London, and since the war there have been seven Easter Bank Holidays without rain in the London district.

The Krelage Building at Haarlem.—The oldest and largest organisation of bulb growers in Holland, de Algemeene Vereeniging voor Bloembollencultuur (General Bulb Growers' Society), after an existence of nearly seventy years, last week inaugurated its own home. This Society was founded in 1860 by the late Mr. J. H. Krelage, who was not only the leader of the bulb growers during forty years, but also the organiser and the recognised representative of Dutch horticulture in general. In Holland he occupied a similar position to that of the late Sir Harry Veitch in this country. After his death, in 1901, a Committee was founded in which all the leading Dutch horticultural societies of the time were represented by their presidents. This Committee tried to collect funds for building a horticultural home, especially for the use of the General Bulb Growers' Society and the Dutch Horticultural and Botanic Society, as a tribute to the memory of the man whose entire life had been dedicated to the welfare of his fellow horticulturists. Although a large amount was collected, it did not suffice to realise the Committee's object. Meanwhile, the Bulb Growers' Society urgently needed a suitable building for the weekly bulb exchange business, the weekly flower shows and other institutions. The Society, starting with 200 members (and having 2,500 when Mr. J. H. Krelage resigned as President), now numbers over 4,200 members, and the exchange and other weekly meetings attract large crowds of bulb growers from all parts of the bulb district to Haarlem. After repeated discussions, the general meeting of the Society approved the Council's proposal to buy the site of an old machinery factory in the centre of Haarlem. The funds of the Committee referred to above were also used for the purchase. Once the decision was arrived at, the Council acted promptly, and succeeded in getting the building ready by March 31, when it was officially inaugurated by the Minister for Home Affairs and Agriculture in the presence of numerous officials and 1,500 members. The building contains a very large hall for the weekly bulb exchange, measuring 300 feet by 110 feet, with nearly ninety small offices for firms on all sides along the walls; telephone connections with the whole bulb district; a splendidly decorated room for the court of arbitration for mutual differences in bulb transactions; another large hall for the weekly shows of novelties; rooms for the President, the Secretary and his staff; a committee room; a library; a garage for a hundred cars, and a restaurant. The surrounding site is used as a trial garden for testing and comparing new varieties and examining them for the trial-garden certificate. The building is situated in Leidsche Vaart, Haarlem, and bears the official title of "Krelage Huis" above the entrance. The total cost is between £25,000 and £30,000, and to this sum the Municipal Council of Haarlem contributed £8,500.

Leeds Paxton Society.—This Society's Syllabus for the present year commences with a small exhibition of Daffodils on April 14, followed by a lecture on "Rotation in the Vegetable Garden," on April 21. May 5 is an open exhibition night, and on May 12 there will be an exhibition of Tulips, while on May 19, the members will visit the Wetherby Bulb Farm by the invitation of Mr. A. Nugent Smyth. Exhibitions of seasonal flowers will be held on June 2, June 9, June 16; July 21, July 28; September 8, September 15 and September 29; of soft fruits, on August 11; and vegetables on August 18. The members will visit Harewood House gardens on June 23, Duncombe Park gardens on July 7, and Carr Manor gardens on July 14, and arrangements are being made for members to visit York Gala on June 20; Roundhay Show on July 10; Southport Show on August 23; Farnley Show on August 25, and the local allotment show on September 7. On September 22, a special lecture will be delivered by Mr. J. R. Marsden, on "Coal and its By-products and their Relation to Horticulture."

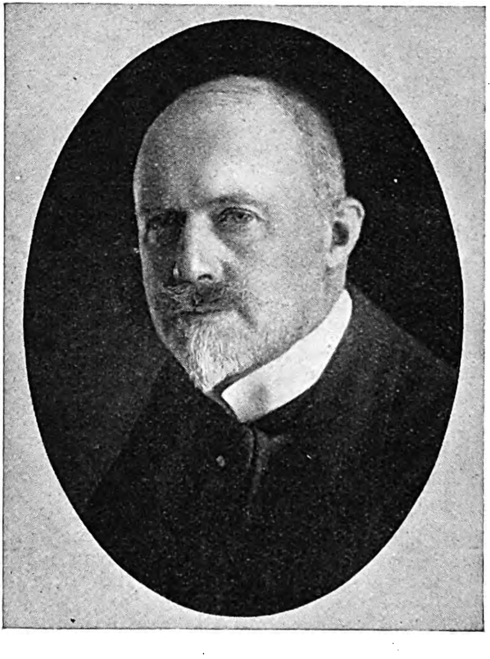
National Auricula and Primula Society.—A little booklet issued by the National Auricula and Primula Society contains the fifty-first annual report, and the schedule of prizes to be awarded at the exhibition to be held in the Royal Horticultural Hall on April 24 and 25. The James Douglas Memorial Challenge Cup is offered this year to amateurs only, and will be awarded to the best exhibit of six distinct Alpine Auriculas. A special prize is also being offered for named varieties of gold-laced Polyanthuses. Altogether there are thirty-three classes. The booklet contains a description of the various classes into which Show Auriculas are divided, the rules of the Society, and a short account, with an illustration, of the old Auricula named Lancashire Hero, which made its first appearance in 1846.

Extraction of Flower Perfumes.—A most interesting article, describing the modern processes of extracting the perfumes of fresh flowers, recently appeared in a scientific contemporary, from the pen of Mr. W. A. Poucher, who is one of the leading authorities on all matters connected with this subject. Mr. Poucher describes, in a very able manner, the development of the various processes employed in the extraction of flower perfumes, from the days of the early Egyptians and Greeks, when a crude absorption method by means of animal fats and Olive oils, was employed, to the present time, when the flower oils are extracted with the aid of light petroleum ether, the process being too involved to admit of a detailed description. Mr. Poucher's knowledge of plants is undoubtedly as unique as it is extensive, for there seem to be few plants that he has not become familiar with in his search for beautiful perfumes, a quest that has, apparently, been extended to all parts of the globe.

Competition of Industrial Designs.—By kind permission of the Board of Governors of the Imperial Institute, the public exhibition of works sent in for this year's competition of Industrial Designs will be held in the Exhibition Pavilion of the Imperial Institute, South Kensington, S.W. Full particulars of the scholarships and prizes offered in connection with the competition may be obtained from the Secretary of the Royal Society of Arts, Adelphi, W.C.2. Applications for forms of entry, labels, and instructions, must be sent to the Secretary of the Society between May 1 and May 12. The designs entered for the competition are to be forwarded to the Imperial College of Science and Technology, Imperial Institute Road, South Kensington, S.W., between June 18 and June 20, and after the judging, which takes place in July, the accepted designs will be on view at the Imperial Institute from August 4 to September 1 (Sundays included).

Travelling Research Fellowships.—On the recommendation of the Advisory Committee on Agricultural Science, the following grants have been awarded:—£75 to Mr. N. Bisset, University College, Cardiff, for a visit of two months to the Pasteur Institute, Paris, to study epidemiology in domestic animals; £100 to Mr. H. G. Thornton, Rothamsted Experimental Station, for a visit to continental countries in connection with his work in bacteriology and the growth of Lucerne; £40 each to Professor E. S. Salmon and Dr. W. Goodwin, of the South Eastern Agricultural College, Wye, for a visit to Germany to study Downy Mildew of Hops; £250 to Mr. A. D. McEwen, Royal Veterinary College, for a visit to the United States to study American work on contagious abortion in cattle; and £80 to Dr. A. D. Imms, of Rothamsted Experimental Station, for a visit to the United States and Canada to attend the International Entomological Conference and to visit centres of entomological research.

Mr. George Monro, C.B.E.—During the past few years, Mr. George Monro has become a prominent figure in the horticultural world by reason of the valuable assistance he has been able to render the Ministry of Agriculture and the Royal Horticultural Society. He is the second of the three brothers who are chiefly responsible for the management of the huge Covent Garden business founded by their father. Mr. George Monro is most intimately associated with the flower and plant department at 4, Tavistock Street, indeed, his own office is only a few feet from the Editor's room in *The Gardeners' Chronicle* offices. Mr. George Monro is always on the alert to assist his colleagues in the flower trade, especially in connection with the market, transport, rates, etc.; he is a former President of the British Florists' Federation, and still a member of its governing body. He is a member of the Council of the Royal Horticultural Society and of the R.H.S. Narcissus and Tulip Committee. This year he is President of the British Section of the Ghent Quinquennial Show, and is using his wide influence to make this section a success. Although belonging to a very peaceful profession, Mr. G. Monro was a very busy man during the war, in connection with the control and distribution of foodstuffs, and also as a member of the Headquarters Detachment of the Metropolitan Special Constabulary; indeed, strange as it may seem to those who know him only as a great grower and distributor of flowers, he received the honour of Commander of the Order of the British Empire as an acknowledgment of his services as a policeman! and it was in the uniform of the "Specials" that we gave his portrait in our issue of January 1, 1921.



MR. GEORGE MONRO, C.B.E.

Hampton Court at Easter.—The numerous visitors who made Hampton Court their rendezvous during the Easter holidays were greeted by a rich display of spring flowers that enliven the beds and borders, and the wilder portions of the gardens, with their lively hues. The Wilderness looks especially attractive at this early season of the year, and here are to be seen bushes of the beautiful Berberis stenophylla and B. Darwinii, irregular clumps of Berberis Mahonia, Viburnum Tinus and the popular Ribes sanguinea, and fine trees of Pyrus floribunda laden with opening flower buds of rich rose. The young, coppery-purple leaves of Prunus Pissardii, the golden bells and fresh foliage of Forsythias, and the heavily-flowered Amelanchier canadensis, appropriately termed the Snowy Mespilus, combine to produce a picture of rare beauty, while everywhere, in rich profusion and glorious abandon, the Narcissi, mingled with Wood Anemones, Lesser Celandines and, in one portion, Eranthis cilicica, dance and nod in the spring breeze. The main walk, where, later in the year, herbaceous plants draw crowds of visitors, is at this season gay with spring flowers, which will in turn give way to hosts of Tulips. At present there are beds of mixed Polyanthuses, white, pink and scarlet, large, double-flowered Daisies, Muscaris, Scillas and Chionodoxas, but the plants that appeal most forcibly are those of Dicentra spectabilis, beneath which are good specimens of Primula malacoides. The beds of Wallflowers are just beginning to take on their glorious colours, and the Daffodils, Sir Watkin, King Alfred and Minnie Hume, are extremely showy, as also is the white Arabis which acts as a foil to such things as the Forget-me-not, the dainty Puschkinia scilloides, Aubrietias, Anemone fulgens and Primula The Jewel. The beds on the other side of this walk are bright with masses of double Daisies, Polyanthuses, Wallflowers and Aubrietias, and one of the shrub borders contains well-flowered specimens of Magnolia stellata, Rhododendron racemosum, Pieris japonica and P. floribunda, the edge of the bed being lined with Anemone blanda, A. Hepatica, both pink and white forms, and the little Narcissus cyclamineus. In the King's Garden such shrubs as Cydonia Maulei, Spiraea arguta, Berberis Darwinii and the double-flowered Kerria japonica, provide a pleasant spectacle, and there are also heavily-laden trees of Prunus Cerasus Veitchii, Viburnum Carlesii is commencing to open its fragrant flowers, and the small bushes of Magnolia stellata are blooming freely, but finest of all are those of Magnolia Soulangeana, their enormous blooms forming gigantic pyramids of colour. In this garden also are good beds of the blue Anchusa myosotidiflora and Dicentra formosa. The Knot Garden, with its small formal beds, enclosed with dwarf hedges of Box, Lavender and Thyme, are bright with Hyacinths of various shades, that have as a groundwork Aubrietias, Daisies and Primula The Jewel; and the sunken Henry VIII's Pond Garden completes an absorbing flower ramble with a vision of beds of spring flowers, in nature similar to those previously mentioned.

Kewites in America.—The Association of Kew Gardeners in America held its annual meeting and dinner at the Hotel Brunswick, Boston, Massachusetts, on March 24. Amongst those that were present were Mr. E. H. Wilson, Keeper of the Arnold Arboretum; Mr. T. D. Hatfield, Mr. Robert Cameron and Mr. Montague Free, of the Brooklyn Botanic Garden. One of the oldest living Kewites, Mr. James McGregor who left Kew in 1869, was also present. A very enjoyable evening was spent, part of the time being occupied with a lecture, given by Mr. Free, about his recent visit to Bermuda. It is pleasing to learn of the activities of old Kewites in America, and we wish the Association every success, for no doubt, with its members scattered over so wide an area, many difficulties are experienced in making these reunions so successful as they are.

Legacies to Gardeners.—The late Mr. F. E. Metcalfe, of The Martins, Linslade, bequeathed £100 to his gardener, Mr. G. Davis, if still in his service.—The late Mr. G. Blezard, of Eaton Square, S.W., also left £100 to his gardener, Mr. Lamb.

British Gardeners for Canada.—The representative of the Canadian Pacific Railway Colonisation Department recently suggested to the Canadian House of Common's Immigration Committee, the policy of taking out British gardeners from this country and establishing them in cottages on small areas of land, especially in western Canada. The construction of ten thousand cottages was proposed, while the total cost of this tentative scheme was estimated at £600,000 yearly, of which it was thought that the British Government would bear half.

Kirstenbosch.—In our issue of March 10, (p. 166), we gave a notice of the *Journal* of the Botanical Society of South Africa, which has its gardens at Kirstenbosch. Possibly, many British gardeners would be glad to belong to this Society and to receive its *Journal* annually. This is always interesting, both in its descriptions of the Kirstenbosch gardens and the improvements constantly being made there, and the articles deal with South African genera and areas. The notes on Mesembryanthemums in the current number not only include descriptions and excellent illustrations, but also many useful hints for the cultivation of these plants. With the *Journal* is enclosed a list of seeds of South African and other plants—many of the seeds are not obtainable elsewhere—which are generously sent to members and associates. Associates of the Society subscribe not less than 5s. per annum, and members not less than £1 1s. Those who wish to join should write to Mr. F. E. Cartwright, Hon. Secretary, Botanical Society of South Africa, P.O. Box 267, Cape Town, South Africa.

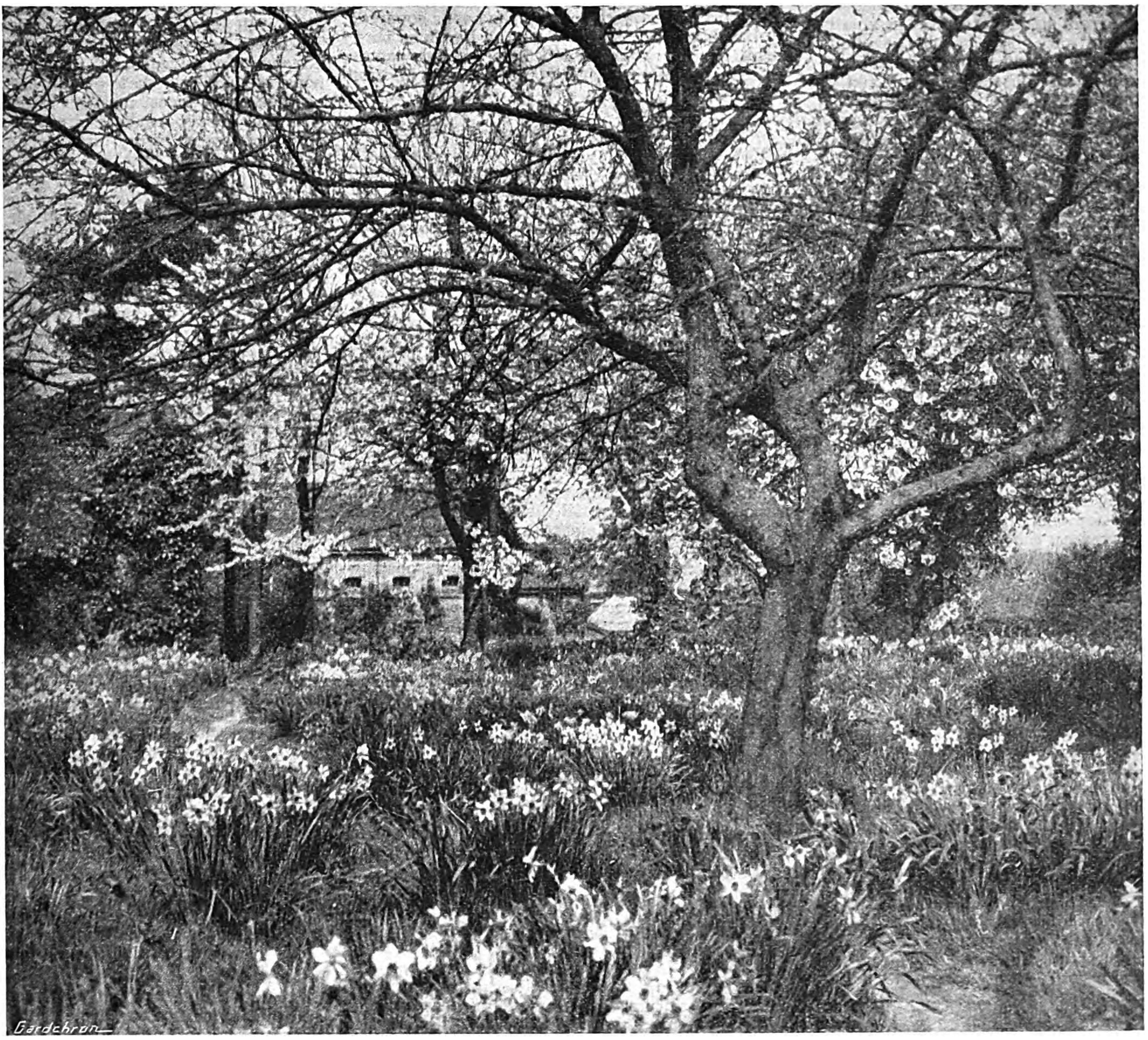


FIG. 126.—WIGGIE: DAFFODILS IN THE OLD ORCHARD.
(see p. 264).

Yorkshire Flower Show.—The Grand Yorkshire Flower Show and Gala will be held on June 19, 20 and 21, and the *Schedule of Prizes* is now available on application to Mr. P. Mennim, The Assembly Rooms, York. The various classes embrace alpine gardens and plants, Orchids, Roses, Gloxinias, Begonias, Calceolarias, Gladioli, hardy herbaceous flowers, Sweet Peas and Table Decoration. A special prize is offered for the best specimen of a new or distinct variety of any stove or greenhouse plant in bloom, while the Sir Edward Allen Brotherton Challenge Cup is offered for the best all-round display, the winner to hold it for one year.

Sir John Russell at Guildford.—On March 26, Sir John Russell, the Director of the Rothamsted Experimental Station, addressed a meeting organised by the Surrey Agricultural Committee, the subject of his lecture being "Modern Developments in Crop Production." He explained the value of various manures and the best methods of applying them, and emphasised the benefit of using farmyard manure in conjunction with artificial ones. He spoke of the advance of science in the matter of ascertaining soil requirements, especially as regards lime. Muriate of potash, a fertiliser of comparatively recent introduction, was dealt with thoroughly, and its value when applied to various crops was well demonstrated. The lecture was illustrated by a series of explanatory lantern slides.

Appointments for the Ensuing Week.—TUESDAY, APRIL 17: Royal Horticultural Society's Daffodil Show (two days); Aalsmeer Flower Show (five days). WEDNESDAY, APRIL 18: Pangbourne Gardeners' Mutual Improvement Association's lecture. THURSDAY, APRIL 19: Tewkesbury Daffodil and Spring Flower Show; Linnean Society's meeting; Ipswich Gardeners' Association's meeting. FRIDAY, APRIL 20: National Rose Society's Spring Show; Orchid Club's meeting. SATURDAY, April 21: Opening of the Ghent Quinquennial Exhibition (9 days).

"Gardeners' Chronicle" Seventy-five Years Ago. — *Rhododendron Dalhousiae.* — Rhododendron Dalhousiae has flowered at Dysart House, Fifeshire, under the skilful management of Mr. John Laing, the intelligent gardener to the Earl of Rosslyn. The foliage of the plant is much larger and more undulating than it has been observed to be in its native state, and the flowers exceed in size those figured in the "Sikkim Rhododendrons." The corolla is more open at the mouth, four-and-a-half inches in diameter, and nearly as long; the colour is white, with a pale orange-yellow at the base inside, and the Lemon odour is faint. The anthers are all imperfect, narrow and produced behind into a sort of horn, lying parallel to the filament. In its native country the corolla is of a much purer white, generally smaller, four-and-a-quarter inches being on the average the largest measured, although four-and-a-half inches have been observed. The Orange hue comes on at a later period; the young corolla is faintly tinged with pink; the Lemon scent is strong and delicious, and the leaves, as mentioned above, are much smaller and seldom undulated. *J. D. Hooker, Gard. Chron., April* 9, 1853.

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN MOORE, Manchester.

Calanthes.—The deciduous species and the numerous hybrids derived from them form a useful group of easily grown, winter-flowering Orchids, for their requirements are easily maintained in a warm, humid atmosphere, with a minimum temperature of 65° at night during the growing season, and a rise of several degrees during the day. Grow the plants near the glass, and shade them from strong sunshine, gradually allowing more sun and air to reach the plants as the bulbs mature. Remove them to drier quarters when in flower, but water should not be withheld entirely until the flower spikes are removed. Most of the varieties are starting into growth, and repotting should be done before the new roots are very far advanced; remove all the old compost and bulbs, and examine each bulb for scale insects, which may be removed more easily now than during the growing season. If about one inch of the old roots is retained at the base of the bulbs, it will help to keep them in position. Strong-growing varieties may be potted separately in five-inch pots, and weak-growing ones may be grown in clumps in seven-inch pots, if so desired. Good drainage is essential, and three-parts of good fibrous loam, one part dried Oak of Beech leaves, well broken up, and a little chopped Sphagnum-moss, adding crushed crocks and charcoal to keep it porous, will form a suitable rooting medium; one part of finely-cut A.1. fibre may be added for the more delicate growing hybrids. Make the compost firm about the base of the bulb and avoid covering the young growths, for they are liable to decay, and leave sufficient space for watering later. No water should be required at the roots until they are well established, but the surroundings and pots should be frequently syringed. Later, when the new bulbs are forming, copious supplies of water may be needed, and an occasional application of weak liquid manure should prove beneficial; it is detrimental to the colour of the flowers if feeding is continued after they open.

Comparettias.—These elegant, free-flowering and showy Orchids, of which C. macroplectron is one of the best, thrive at the warm end of the intermediate house, where a humid and buoyant atmosphere is maintained. Well-rooted plants require ample supplies of water during the growing season, and they should never remain dry at the roots for long periods. Fresh roots are now showing, and any plants requiring fresh rooting material may be attended to, using baskets or well-drained pans and a compost of A.1. and Osmunda fibres and Sphagnum-moss. Thrips are often troublesome and should be kept in check by spraying with an approved insecticide during the growing period.

THE KITCHEN GARDEN.

By ALLAN FALCONER, Gardener to the Cheadle Royal Mental Hospital, Cheadle, Cheshire.

Carrots.—A good breadth of Carrots may be sown on fertile ground not recently manured, but which is in good order, and of a fine tilth. Apply a dressing of soot or lime and wood-ashes, and draw drills about one foot apart; sow the seeds thinly but evenly in them. Rake the bed level, and when the seedlings appear, give frequent dustings of soot in showery weather. For exhibition purposes, seeds may be sown in holes prepared in the same manner as advised for Beetroots.

Seakale Beet.—A rich piece of ground, in an open position, should be selected for this crop, and if seeds are sown now, very thinly, in drills eighteen inches apart, and about one-and-a-half-inch deep, covering them with fine soil, and thinning the subsequent seedlings to fifteen inches apart, very fine produce will be ready for use early in the autumn. Attention to watering and feeding with liquid manure is essential; the outside leaves should be pulled off when ready in preference to cutting them all at once. The large midrib makes a good substitute for Seakale, and the leaves may take the place of Spinach.

Cabbages and Broccoli.—Cabbages that were planted in the autumn will now require a stimulant in the form of nitrate of soda, and Broccoli may be given a dressing of sulphate of ammonia. Stir the surface of the soil with the hoe, and give the beds a good dusting of the manure at the rate of a dessert-spoonful to each plant; it is best applied in showery weather at intervals of a fortnight. In the case of Broccoli, special attention is necessary to keep the heads covered, by breaking their leaves over the heads as they form, an operation which is often neglected, thereby permitting yellow curds of an inferior quality.

General.—Onions, Cauliflowers, Cabbages, Brussels Sprouts, etc., should now be hardened off ready for transferring them to their permanent quarters, so soon as weather conditions will permit. The free use of the hoe is essential to all growing crops whenever conditions will allow, not only to destroy weeds but to aerate the soil and assist growth.

PLANTS UNDER GLASS.

By J. COUTTS, Assistant Curator, Royal Gardens, Kew.

Thyrsacanthus rutilans.—Cuttings of this subject root readily in a close case, if inserted singly in small pots; they should be grown on without stopping, for growths of full length are necessary to display the long, slender, drooping racemes of scarlet flowers; in fact, this plant is not seen at its best until the second year, when it has attained sufficient height to effectively display it long inflorescences. Thyrsacanthus rutilans succeeds in ordinary good potting compost, and under general stove conditions, in an average temperature of 60° to 65°. When in flower the plants will withstand a lower temperature.

Peristrophe speciosa.—This plant is easily grown in a cool greenhouse, and may be readily propagated by means of cuttings at this time. It should be stopped several times during the growing season to induce a bushy habit. The purplish-magenta flowers, that are produced very freely, are of a colour not generally popular, but it is very beautiful when grouped with plants having pale yellow flowers. It is not affected by fogs, and is therefore a useful subject for growing in the immediate neighbourhood of London.

Jacobinia magnifica.—This species, and its variety carnea, are useful and easily grown, and may be flowered at almost any time, according to the time of propagation. Plants propagated last autumn will now require repotting, and if some are raised from cuttings in the near future they will flower during the autumn. Growths root readily as either nodal or internodal cuttings in a warm propagating case; they grow freely in any good potting compost, in a temperature of 55° to 60°, and require ample pot room and liberal feeding.

Campanula isophylla.—Few subjects are more useful for furnishing hanging baskets than are this Campanula and its varieties alba and Mayii. Plants rooted from cuttings some time ago should now be ready for placing in baskets. They may also be grown in pots on the edges of the stages in the conservatory; the variety Mayii is somewhat stronger in growth, and if kept tied to neat stakes is excellent for grouping. Campanula isophylla and its varieties are very easily propagated at any time by means of cuttings.

Berberidopsis corallina.—This beautiful evergreen climber is an excellent plant for a cool greenhouse or conservatory, and is seen at its best when it may be grown in a well-drained bed or border, trained up a back wall in a partially shaded position, for in hot, dry positions it is apt to suffer from attacks of red spider. It is easily propagated by means of layering during the autumn, or by cuttings inserted during the spring; these root readily in a cool house. This Berberidopsis is a native of Chile, and is hardy in favoured parts of this country, especially in the west, where it makes a fine wall covering when planted in a cool aspect.

HARDY FRUIT GARDEN.

By T. E. TOMALIN, Gardener to the EARL OF BESSBOROUGH, Stansted Park, Emsworth, Sussex.

Fruit Prospects.—The display of bloom promises to be good on most kinds of fruit trees. Plentiful blossom, however, does not always presage a bountiful harvest, especially when it is followed by a wet and comparatively sunless season, such as that of 1927. After such a season fruit trees usually blossom profusely, but the display in these circumstances is rarely followed by a heavy crop. Apricots flowered splendidly, but have not set at all well. This is partly due, no doubt, to the fact that 17° of frost occurred on March 12 when the trees were in full bloom, and against which even Hessian canvas covers were inadequate protection, and partly to that inherent weakness in the flowers which may be expected after a sunless autumn. Peaches and Nectarines, now flowering well, are meeting with rather better weather conditions, although, owing to frequent showers, the pollen has seldom been dry enough to be distributed freely. Plums and Gages are showing an abundance of blossom, but it was rather more forward on March 31 than one would like to see it. Pears, with the exception of two or three varieties which were allowed to carry too many fruits last season, are flowering freely again, especially the varieties St. Luke, Triomphe de Vienne, Marguerite Marillat, Louise Bonne of Jersey, Williams's Bon Chrétien, Pitmaston Duchess and Roosevelt. The exceptions are Conference and Doyenné du Comice, but this is probably only locally, for I noticed these varieties laden with flower buds in the south of Ireland last week. Apples promise well generally, the dessert varieties Cox's Orange Pippin, Ribston Pippin, Margil, Duke of Devonshire, Beauty of Bath, St. Everard, and even the shy-fruiting Gravenstein, are showing an abundance of fruit buds, whilst cooking varieties which promise well include Lord Derby, Annie Elizabeth, Lane's Prince Albert, Norfolk Beauty, Grenadier, Baron Wolseley and Bramley's Seedling. Cherries, both dessert and cooking varieties, give promise of a full display of blossom in the course of a week or so.

FRUITS UNDER GLASS.

By T. PATEMAN, Gardener to SIR CHARLES NALL-CAIN Brocket Hall, Hertfordshire.

Melons in Frames.—With the lengthening days and the higher temperatures that may be obtained by sun power, the cultivation of Melons, either in heated pits or in cold frames may be considered. Amateur and professional gardeners find it necessary to make use of cold frames to produce Melons during the summer months, and very good results may be secured. If fresh stable litter and leaves are obtainable they should be mixed in equal parts and thrown into a large heap, which should be turned several times to allow the strong gases to escape before finally making the beds. Melons may be obtained by this method in from fourteen to sixteen weeks from seed-sowing, but much will depend on climatic conditions; if the weather is not too cold no other heat will be necessary, but should it prove so, it will be wise to re-line the frames with fresh fermenting material when the plants reach their flowering stage. As a rule, sufficient warmth is forthcoming during the months devoted to the cultivation of Melons in frames. Where the young plants are to be raised on hot-beds the seeds may be sown singly in small pots a day or so after the beds have been formed; they should germinate very quickly under these conditions, and the seedlings should be ready for planting by the time the heat has subsided. It may be found necessary to provide a small opening in the frame to allow any steam to escape. Slugs are very partial to seedling Melons, therefore it is advisable to sprinkle some old soot around the receptacles to protect them. The compost should be prepared and placed in the frames several days before planting takes place, the most suitable compost being a good fibrous loam of a somewhat heavy nature, to which may be added broken charcoal, old mortar rubble and a sprinkling of bone-meal. The ridges or mounds on which the plants are to be grown should be made so firm as possible, and the soil should be used in a fairly dry state, to allow it to be made firm without making it into a paste. Too light, or too rich soil is not to be recommended for the cultivation of Melons. The production of rampant growths should not be encouraged; short growths, with good, firm foliage, being the most suitable for assuring a successful crop of fruits.

THE FLOWER GARDEN.

By J. G. Weston, Gardener to the Duke of Devonshire, Chatsworth, Bakewell, Derbyshire.

Montbretias.—The corms of these, that were lifted in autumn and protected during the winter, should be planted without further delay. In the warmer parts of the country annual lifting is unnecessary for protective measures, but it is good practice to lift the clumps, and after selecting the strongest bulbs, to replant them on well prepared ground at this season. Montbretias left undisturbed for a number of years gradually deteriorate owing to exhaustion of the soil and overcrowding of the growths, and the amount of flowers obtained from these crowded clumps bears no comparison with the showy spikes of bloom produced by plants that have been divided and given good cultivation. The selected corms should be planted out about twelve inches apart, in good soil, and although not fastidious in this respect, thriving as they do almost anywhere, a rich, moist, soil is most acceptable to them. The commoner varieties are excellent for planting in good breadths by the side of water, or in moist places in the wild garden or woodland, or in the front of shrubberies; for these purposes they seem peculiarly adapted. The newer varieties, such as Star of the East and Prometheus, seem to be less hardy than the old varieties, and require protection during the winter.

The Herbaceous Borders.—Most of the plants in this section are now growing freely, and if the weather and other circumstances have delayed the completion of planting, it should be finished quickly so that the plants may become established before possible dry weather sets in. Most of the choice early-flowering perennials such as Paeonies, Hemerocallis, Delphiniums and Alstroemerias, resent disturbance at the roots so late in the spring. On the other hand, the perennial Asters, Solidago, Helianthuses, Heleniums and Chrysanthemum uliginosum may still be planted without any detriment to their successful flowering this season, if a little extra care is taken to establish them. If the soil is heavy and likely to cake, a mulching of light soil or leaf-mould will help the plants and facilitate the use of the Dutch hoe later. This tool should be in constant use in the beds and borders, not only for the eradication of weeds, but also to keep a fine tilth on the surface, thus preventing a too rapid evaporation of moisture from the soil during hot weather.

FOR NORTHERN GARDENERS.

By A. T. Harrison, Gardener at Jordanhill Training Centre, Glasgow.

Snowdrops.—Where any rearrangement of existing groups of Snowdrops is desired, or where the clumps have become matted by reason of age, the present time is most suitable for separating and replanting them, while the foliage is still fresh and green. The planting of these and other flowering bulbs in the woodland should always be done in an informal manner avoiding all appearance of straight lines, and massing or grouping them in the most natural way; and wherever possible, the sites selected should be within view from the paths. Many instances may be recalled where these early spring flowers have been found growing behind bushes, quite hidden from view; these should be lifted and replanted where they may have a chance of being seen in future years, when in flower. This work, if carried out now, gives the bulbs a chance to ripen off naturally in their new site, and the results next season will be better than when dry bulbs are planted in autumn.

Kniphofias.—The various members of this family may now be divided and replanted, if necessary. The commonest form, now known as K. aloides (syn. Tritonia Uvaria), is a most useful plant for various purposes where a display is required during autumn, and as it increases rapidly under favourable conditions, it benefits greatly by being lifted and divided from time to time. If beds are filled with this species the opportunity should be taken, when breaking them up, to enrich and cultivate the soil before replanting them, and any small pieces not immediately required may be planted in nursery rows, where in course of time they will provide useful material for future use. These subjects may also be effectively used by the edge of water and also in the mixed border or in the wild garden; they are, when once established, well able to hold their own with other plants. The glaucous-leaved kinds, such as K. caulescens, K. foliosa and K. Tysoni, although not so frequently seen and generally not so free-flowering as K. aloides, are useful foliage plants which may be employed in association with Cordylines, Yuccas and Bamboos, where subtropical effects are desired. They may be increased by removing some of the numerous side-shoots and placing them in rows in sandy soil, where they will soon root. The dwarf forms, of which K. pumila is the best known, may be employed as groups in the rock garden, or in the front of the mixed border, where the delicate spikes, reaching only from fifteen to eighteen inches in height, may be seen to the best advantage.

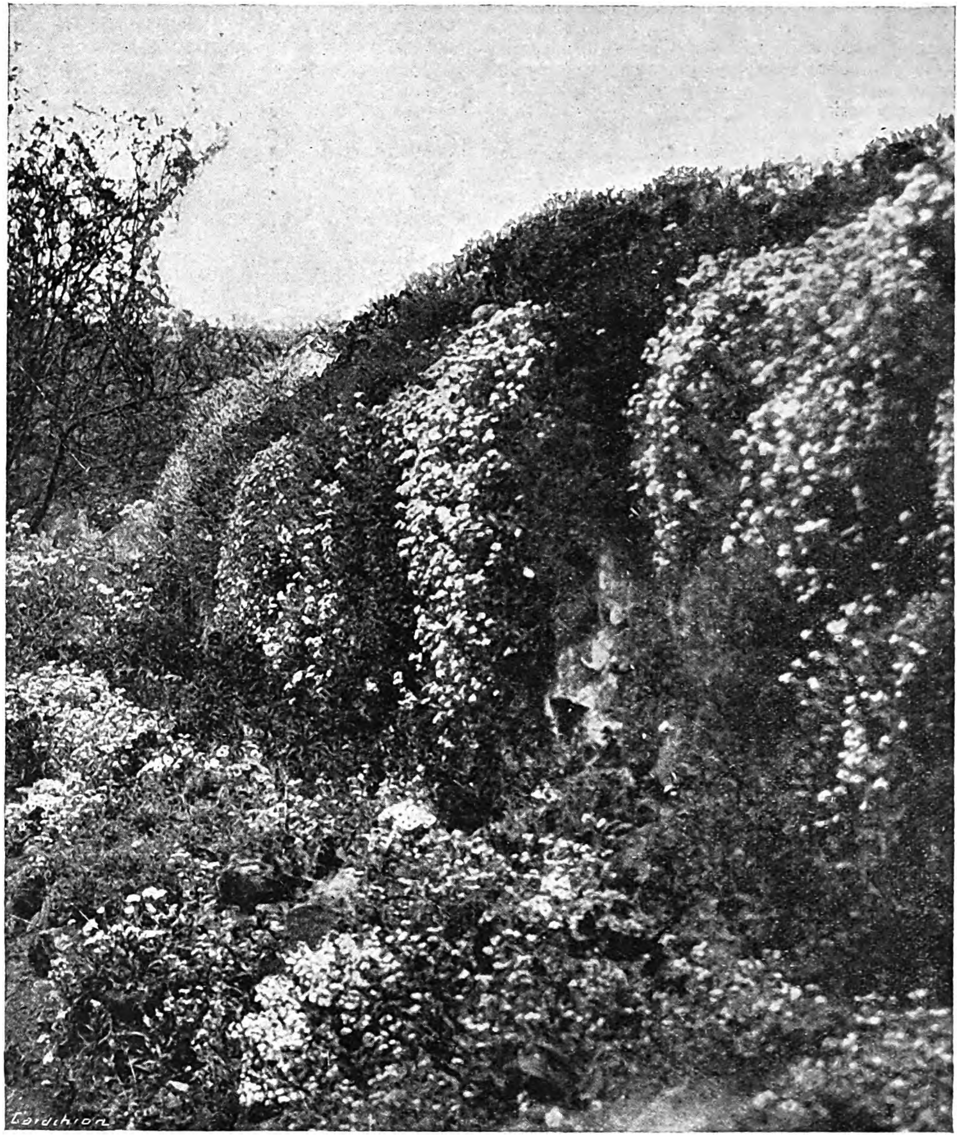


FIG. 127.—WIGGIE: THE WALL GARDEN.
(see p. 264).

Perpetual Carnations.—The young plants that were rooted early in the year and potted up singly during February should now be placed in four-inch pots, using a rough compost of good turfy loam, lime rubble and sand. Many of the plants have already been stopped to ensure the side-shoots breaking strongly, and any that have not yet required this operation should have it deferred until they are again growing freely in larger pots. A close watch should be kept during these early stages for the first sign of green fly, and measures taken, either by spraying or fumigating, to keep them clean. The plants should henceforth be grown in a moderate temperature, admitting plenty of air on sunny days, and endeavouring by every means to build up strong, robust plants. Tying and frequent disbudding of the flowering plants should be attended to regularly, and an occasional top-dressing of Carnation manure will keep them in good condition.

HELIANTHEMUMS.

Although most of them do not flower until June, or July, the Sun Roses (Helianthemums) should not be overlooked by those engaged in spring planting. It is desirable to secure plants in pots, but they are by no means averse to being moved from the open ground, even old specimens transplanting with tolerable ease. Few dwarf flowering shrubs may compare with the Sun Roses in prolificacy of blossoming. A very wide range of colours is afforded even by a small collection, and in dainty elegance of habit they are unrivalled. In cultivation the Helianthemums are easily pleased, all they need being a poor, gritty or rocky root-hold in full sun. They do particularly well in calcareous soil, but this is not essential.

H. halmifolium is the tallest species, making a bush of over four feet in height. The branches are long and slender and the pointed leaves narrow, hard and silvery. In full summer these branches, as well as the lateral growths, terminate in bold panicles of canary-yellow blossoms which have a small brown blotch at the base of each petal.

The closely-allied H. algarvense (ocymoides) is only about half the height of the foregoing. It is also more compact in habit, and the chocolate eyes of the yellow flowers are bolder and more conspicuous. The vermilion-tipped buds are an attractive feature of this species.

H. candidum may be said to occupy a place about mid-way between the two species mentioned. The bright yellow blooms, with their strongly-marked "iris" of rich brown, are, as in the others, yielded profusely in erect panicles throughout the second half of summer.

H. formosum is, perhaps, the finest of all the yellow-flowered Sun Roses. It has a somewhat trailing habit, the long, limp growths delighting to hang over sloping rocks, low walls and the like. The leaves are downy, especially on the underparts and the blooms which wreathe the graceful branches are saucer-shaped, unusually large, and a rich yellow adorned with a bold chocolate blotch at the base of each petal. H. f. var. unicolor (concolor) is an unblotched form with rather smaller flowers, but it is one of the best of the self-coloured yellows.

Another first-rate species with plain yellow blossoms is H. alyssoides. Indeed, I should have no hesitation in giving this species the premier position among all other species of its colour and size, for the blooms are not only a particularly pleasing, warm yellow, but they are produced in amazing prodigality for an exceptionally long period. H. alyssoides is, in fact, an all-season blossomer. It begins early, reaches its greatest beauty in June and July, and will continue to give a certain amount of colour even throughout the autumn. Unfortunately, this fine plant is not one of the hardiest, but it will often endure up to 20° of frost without serious injury. It is a low, compact grower, making a wide, dense bush some nine to ten inches deep, and ultimately covering a yard or more of space.

Also with unspotted flowers of a good shade of yellow, is H. Libanotis. This is a very choice and distinct species, and one which fully deserves a wider recognition. It is a rather loose-habited little shrub of about eighteen inches, with narrow, pale green leaves and thin, wiry branches, at the ends of which the charming blossoms are borne singly, in pairs or in threes. I have found H. Libanotis quite as hardy as the last-mentioned, if grown in dry, poor soil. It has been known as H. rosmarinifolium, a name which is often erroneously attached to H. umbellatum. Although there is a general resemblance between these two Sun Roses in the Rosemary-like foliage common to both, that of H. umbellatum is a very much darker green. The latter, moreover, is at once distinguishable by its little, pure-white, cup-shaped flowers, which are borne in terminal racemes in the greatest abundance throughout the season. H. umbellatum is an excellent rock garden shrub, and as it has much the same height and character, it may be very usefully grouped with H. Libanotis.

Among the smaller Sun Roses suitable for a choice spot in the rock garden is H. lunulatum. This is a delightful little shrub with small, silvery leaves closely arranged on the slender branches, and flowers of a clear yellow. The latter may be identified at once by the orange spot at the base of each petal, and they are yielded in the utmost profusion from terminal bud clusters. Although this fascinating shrub may lose most of its leaves in winter, it appears to be quite hardy. It does not exceed six inches in height, but may make a cushiony mass one foot or more in diameter.

Another species of somewhat similar habit, but more inclined to trail, is H. vineale, a rare native. The small green leaves are hairy, especially on the underparts, and the unblotched, clear yellow flowers are borne in terminal racemes.

H. apenninum, also an uncommon native, is considerably taller, growing to about eighteen inches. The flowers, which are fully one inch across, are pure white, save for the cluster of golden stamens common to the race, and the linear leaves are a grey-green. There is a rose-pink variety of H. apenninum (H. rhodanthum, or roseum), but neither this nor the type possesses the general garden merit of the many beautiful Sun Roses raised from H. vulgare. Of these latter there is such an enormous number that any attempt to describe them individually would be beyond my scope here. Let it suffice to say that they constitute one of the most useful and beautiful groups of rock garden flowering shrubs, and that none more richly deserves the immense popularity which it enjoys. Every season the number of these Sun Roses is enriched by newcomers, and the most distinct of the novelties which have come my way of late is a unique class known as the Tighnagarth Strain. I am indebted to Mr. R. C. Notcutt, of the Woodbridge Nurseries, for several of these plants, and although I have not grown them sufficiently long to enable me to express very decided views upon their behaviour, they certainly promise all that is claimed of them. That is to say, they are Sun Roses which, while retaining the very dwarf stature of the type, bear much larger flowers, and the colours range from pale yellow to orange, and from blush pink to crimson and scarlet, some of the shades being quite distinct. Mr. J. Nichol, of Montifieth, who, after many years of careful selection and, presumably, crossing, raised this strain of delightful and neat little Sun Roses, has called each of the varieties by the name of a Scottish mountain. These newcomers, I need scarcely add, are perfectly hardy and as easy to grow as any of the well-known kinds. *A. T. Johnson.*

INDOOR PLANTS.

HIPPEASTRUMS.

These glorious indoor, bulbous plants are being more generally grown than formerly, but one of the reasons why they are not more popular is that their very simple requirements are not properly understood. Here we grow about one thousand plants, which, when brought forward in small batches have a flowering period of at least nine months, commencing with the first display at the festive season of Christmas, at which time, especially, bright colours are appreciated.

The handsome flowers are adapted either for grouping or for use in single receptacles, and as the colours vary from crimson downwards, a choice can be made to harmonise with the surroundings.

To produce the earliest display, we select some of the earliest and best-ripened bulbs; naturally these are from those first treated in the previous season. (I may add here that no bulb is chosen for early flowering until the point of the flower bud is visible.) All loose scales are removed and so much of the old soil taken from the surface as possible (at least two inches), and a very rich top-dressing applied, after which the plants are given a good soaking of water. I find that during dull seasons, if the pots are plunged in fibre in a frame placed over the hot-water pipes, and the bulbs are sprayed with tepid water, very little water is required at the roots until active growth takes place, when the plants are removed to a structure where a temperature of about 60° is maintained. As the spikes develop the Hippeastrums are removed to a somewhat cooler house.

Feeding should commence so soon as growth becomes free, and for this purpose there is nothing to equal dried blood. This is made into liquid form and applied sparingly. Immediately the plants pass out of flower, they are placed in a warmer temperature, and then fed very freely with the above-named nitrogenous manure and occasionally with diluted drainings from the stable; this practice is continued until the foliage turns yellow.

A light house or pit is most suitable for the accommodation of Hippeastrums throughout the growing season, advantage being taken to husband solar warmth by closing the lights early. We use the syringe freely at all times. As regards potting, I find the less this is done the better are the results, and it should not be performed more often than is absolutely necessary. The potting compost should consist of three parts good mellow, fibrous loam, one part Mushroom-bed manure, some bone-meal, sand, and a dash of soot. This compost should be made very firm as the work proceeds.

At the present time we have plants in flower which have not been potted for two or three years; they are splendid, and many of them have produced two very strong spikes each. One bulb (only nine inches in circumference) has three perfect spikes—this, I think, is rare. On two other bulbs, the individual stems are carrying seven perfect flowers. No bulb is allowed more than a six-inch pot, and some are nearly as large as the pot, while many are producing good spikes in five-inch receptacles.

PERPETUAL-FLOWERING CARNATIONS.

During the dull months, when sunshine is more or less conspicuous by its absence, these Carnations prove extremely valuable, especially where cut flowers are in demand. For this particular purpose a few names of proved varieties which withstand the test may not be out of place.

As a good all-round Carnation, with perfect stem, bloom and calyx, as well as being free-flowering, I place Baroness de Brienen (pink) at the head of the list, but it should be borne in mind that this variety should not be stopped later than the first week in May. Another pink sort, although not so rich in colour as the first named, is R. F. Felton; this is at all times a cut-and-come-again variety. As a good crimson and also a continuous bloomer, Topsy is hard to beat. Among scarlet varieties, I find Thor and Edward Allwood the two best, the first-named having preference.

In cerise shades, the varieties Destiny, and the old Mrs. T. W. Lawson, are both good here, and produce plenty of flowers, although those of the last are on the small side. Good mauve varieties are Mikado and Coquette, with wiry stems; Circe is also useful. White Pearl, Wivelsfield White, White Enchantress and Crystal White are all good white varieties.

In conclusion, Carnations require plenty of fresh air, not too many stimulants, and a temperature averaging about 48° to 53°. *R. H. Crockford, Horsley Hall Gardens, North Wales.*

GARDENIA STANLEYANA.

This very distinct species is now very uncommon in cultivation, being only occasionally encountered in old-established collections; it thrives under the same conditions as required for such better-known plants as G. florida, G. Fortunei and G. intermedia, and may well find a place in the comparatively few existing collections of choice warm-house plants.

The tubular, white, purple-spotted flowers are produced on the upper sides of the shoots and stand well above the leaves; the plant attains considerable size, the branches assuming a flat, horizontal position.

Sometimes referred to as Randia maculata, this interesting evergreen plant, or, rather shrub, was introduced from Sierra Leone in 1843, under name of Gardenia Stanleyana; it is figured in *Bot. Mag.*, t. 4185.

Another very distinct Gardenia is the dwarf, compact-growing and small-flowered G. citriodora. It is a native of Natal and a most desirable species, the deliciously fragrant blossoms being produced in great profusion, while the compact habit of growth renders it adaptable to a variety of uses. *Ralph E. Arnold.*

ORCHID NOTES AND GLEANINGS.

DENDROBIUM INFUNDIBULUM.

This Orchid, and its variety D. Jamesianum, are now developing their flower-buds, and a slightly increased supply of water at the roots should be given.

The large white flowers, which are usually produced in profusion at the tops of the stems, remain in perfection for a long period if the plants are removed to a dry, cool house. This species thrives in the cool conditions of the Odontoglossum house.

Fresh rooting material should be given when flowering is finished, using small pots and a compost similar to that employed for the deciduous section. Owing to the hairy nature of the stems, which retain moisture over a long period in the cool atmosphere, these Orchids should not be syringed overhead.

A small, white scale insect often attacks the plants, and should be removed so soon as detected. *W. G.*

ALPINE GARDEN.

PHLOX DIVARICATA VAR. LAPHAMI.

Many are familiar with the beautiful summer-flowering Phlox divaricata and its value as a decorative plant, both in the rock garden, where it may be used to the best advantage, and the herbaceous border, is generally admitted. Of the several forms that are obtainable the variety Laphami, that has now been in cultivation for a considerable number of years, is possibly still the most noteworthy, for its somewhat neater habit and slightly longer season of blooming, make it a much superior plant to the type.

Its flowers, which are borne in terminal clusters on stems twelve or more inches high, are of a deeper and richer blue shade, and are slightly larger, while the more compact habit of the plant enables them to be displayed more effectively.

Phlox divaricata var. Laphami, together with the type plant and other forms, delights in a cool, deep, moderately rich root-run, and a position that is not too openly exposed to the sun; under such conditions they will all form beautiful drifts of colour and grow luxuriantly. Propagation is easily effected, for during the growing season, both before and after the flowering period, an abundance of shoots is produced that root quickly if inserted in sandy soil under a bell-glass or in a cold frame, and will form plants of goodly size for planting out in the following spring.

Apart from their value on the rock garden, these Phloxes are most useful as subjects for the herbaceous border, where, if planted in groups towards the front, they will combine with the other subjects to produce a charming effect. *F.*

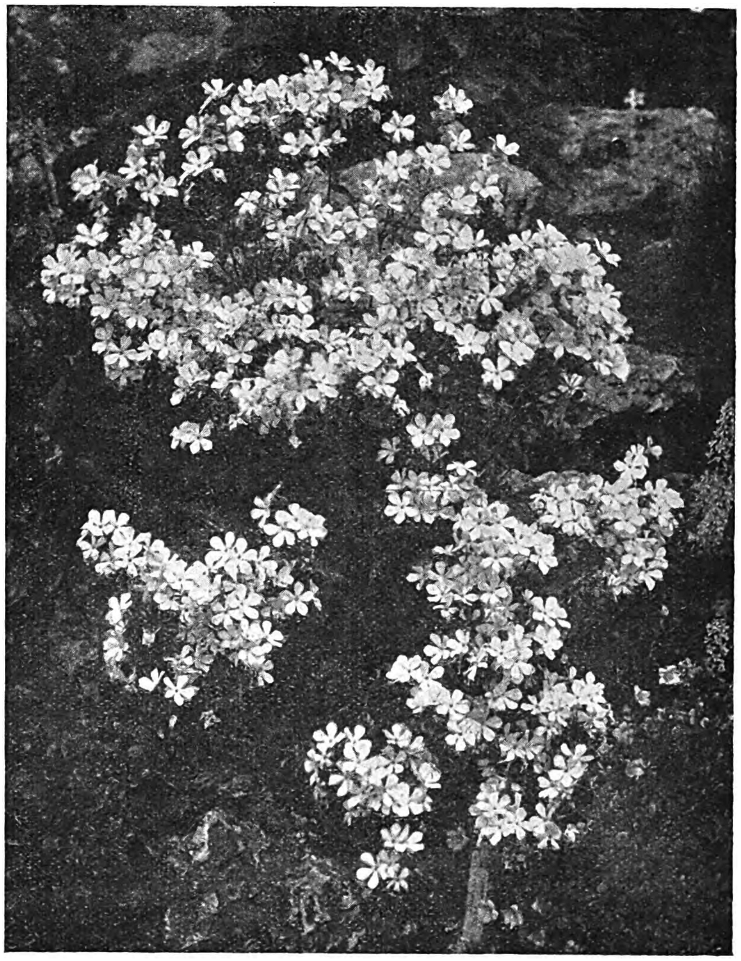


FIG. 128.—PHLOX DIVARICATA VAR. LAPHAMI.

MORISIA HYPOGAEA.

This charming little plant is increasing in popularity, if we may judge by the frequency with which it has appeared on show stands during the past year or two. One hears, however, frequent complaints that M. hypogaea is averse to making itself at home with us. On the contrary, it is one of the most easily managed of choice rock plants, when grown in a situation and in soil comparable with that of its native country, insisting as it does on a sunny position, a cool root-run, and perfect drainage. An ideal situation is one facing due south, either in a moraine, scree, or other gritty compost. If a half-buried boulder can be placed with a southern face, M. hypogaea will revel in being tucked close up against the rock, so that the thick, succulent roots may burrow underneath and find that cool, damp condition which they enjoy so much. The soil should be a light turfy loam, with a little leaf-mould and plenty of grit and sand; above all it should be deep and provided with free drainage. Many keen alpinists advise the addition of mortar rubble or limestone chips; yet I have seen little clumps of M. hypogaea smothered with flowers and growing happily in a granite moraine, the same year as they were planted in that medium as an experiment. A little clean sand sprinkled on the surface of the soil keeps the latter loose round the plant during dry weather, and also helps to deter moss.

A description of this species is, perhaps, unnecessary. All are familiar with the neat rosettes of glossy, pinnatifid foliage, and the lovely and comparatively large labiate flowers, clear yellow in colour, resting on the cushion or rising on short stems. What is, however, of supreme importance is the possession of thick roots, the stouter of which will furnish excellent plantlets if cut about half-an-inch long and just covered with sandy soil, under a bell-glass in a cold frame, or over gentle bottom-heat. Other methods of propagation are by leaves, division or seeds. Propagation by leaf-cuttings I have not tried, but those who have claim that reasonable success is assured, and many prefer this to other methods. Seeds should be sown so soon as ripe, and it is worthy of note that this plant likes to bury its seed-capsules while the busy gardener is attending to other matters.

M. hypogaea is an ideal subject for the alpine house, where it will flower so early as February. Among the rocky mountains of Corsica and Sardinia it is in bloom from the autumn months till June of the following year, but with us it is hardly so precocious, waiting for the bright spring days before opening its quaint flowers. It was first brought to England nearly one hundred years ago by a lady to whom seeds had been given by Professor Moris of the Turin Botanic Garden, and after having been lost to our gardens for many years, this dainty and quite hardy little gem found its way once more into this country in the nineties of last century through M. Correvon. *L. B. C.*

WALDSTEINIA GEOIDES.

The purchaser of a small plant of Waldsteinia geoides, such as the exigences of trade conditions render it necessary for the nurseryman to supply, will assuredly be sadly disappointed with its appearance when it first comes into bloom, but such a plant will not show the real beauty of this subject.

It has not the running habit of other Waldsteinias, but is of a close-growing habit, forming a tuft of Strawberry-like leaves a few inches high and slender stems carrying a number of small, yellow flowers, which are borne in succession pratically throughout the summer. These blooms are small, but on a plant nine inches or more across they are produced freely and form a happy combination with the foliage, seeming to cover the latter, when seen a little way off, with a golden haze.

Waldsteinia geoides is an excellent plant for the rock garden, where it should be planted below the level of the eye. It thrives in light soil, in sun or shade, and may be increased by division, while plants of it are inexpensive and may be secured from many hardy plant nurseries. *S. Arnott.*

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WIGGIE.

AN OLD WORLD GARDEN.

> "There did I see a pleasant paradise
> Full of sweete flowers and daintiest delights
> Such as on earth man could not more devize:
> With pleasures choyce to feed his cheerful sprights."
>
> *Edmund Spenser.*

SPENSER might have been describing Mr. Arthur Trower's old world garden at Wiggie, near Redhill, when he wrote these lines. This little earthly paradise of flowers is set among the Surrey hills, and although so close to the busy junction of Redhill it seems a remote and peaceful spot.

On first entering the garden on a sunny spring day, the riot of colour made me feel that an enormous palette has had every imaginable and glorious hue spilt upon it. Large beds were aglow with Polyanthus, and close by were the velvety-brown, blood-red and rich gold old-fashioned Wallflowers, from which the sweetest scent wafted.

Amongst these flower beds is a little, winding, grassy path taking one in and out and round about in the most delightful fashion. It leads past one bed in which it seems as if Mr. Trower had planted something of everything, for gay Tulips, delicate Forget-me-nots, golden Wallflowers, double Daisies, Arabis, Aubrietias and Saxifrages all clamoured for admiration. A rockery nearby is glorious with cascades of colour, golden Alyssum, pink and white Saxifrages, purple Aubrietia with drifts of delicate Pasque flowers, and deep blue Gentians. To crown it, there are some of the finest Daffodils the garden can show—huge trumpets that seem to be blowing merry blasts of welcome to those growing more humbly in the grass below in seemingly endless number and variety.

As we turned to follow the little winding path through the orchard which is thronged with Daffodils we saw, coyly peeping up near the edge of the grass, little groups of Grape Hyacinths, and the exquisite white and curious purple and brown chequered Snakeshead Fritillary. Further on, a delightful fragrance greeted us, and we looked down to find pink and white Hyacinths close to our feet. We wandered on and revelled in the beauty of the fruit blossom and the bridal white of the double Cherry hanging its tassels of clustered blooms over the golden carpet of Daffodils. Further on is a Daffodil meadow where there is literally a sea of glory—an almost unbroken stretch of thousands upon thousands of Daffodils, dipping and curtseying in the breeze as if in acknowledgment of one's delight in their beauty. These are not wild Daffodils, but are the finest of garden varieties, all naturalised. Those with golden trumpets are, of course, in bloom first, but by careful planning, when these fade their loss is hardly noticed, for the faded flowers are hidden by those of later and paler varieties.

Mr. Trower has copied nature faithfully, and has no stiff rows or orderly groups. His Daffodils and other flowers appear to have arranged themselves, and the whole effect is charming. The meadow is guarded by tall Elms just showing the tender mist of green against the April sky.

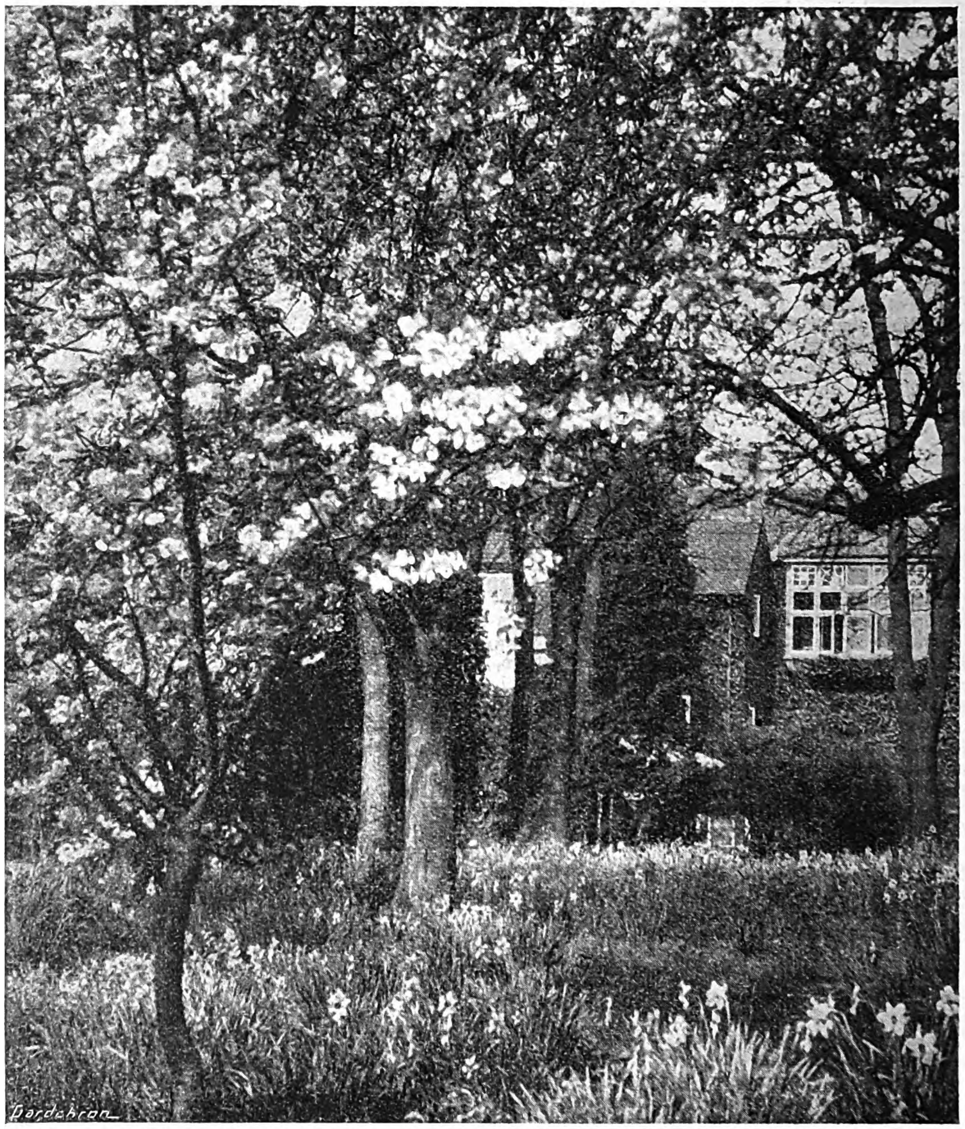

FIG. 129.—WIGGIE: DAFFODILS AND CHERRY BLOSSOM.

Mr. Trower tells his friends, "I don't know how it is, but all my visitors seem so happy here." We do not wonder, for visitors say, "His first welcome makes you feel at home at once." Perhaps the old-fashioned flowers also bring back tender memories to many, and a kindly friendly spirit seems to hover over this well-loved garden. Anyone must indeed be a curmudgeon of curmudgeons not to respond to the welcome and the beauty of the flowers.

Wiggie is a place of greater joy for the happy and a sanctuary of peace and healing for the sick and sad. Could anyone walk along the little winding path through the Daffodil meadow and watch the sun lighting the flowers into golden flames, and not feel that the joy of spring's resurrection—with all its deep meaning—had entered their hearts? *Hilda M. Coley.*

NOTES FROM EDINBURGH.

THE list of plants in flower increases rapidly, especially in the rock garden, where many alpines have felt the kindly touch of real spring weather, and day by day are producing a variety of colour. Some are more beautiful than others, but all are welcome, very attractive and much admired.

The Natural Order of Liliaceae is well represented by quite a number of genera, including Chionodoxa Luciliae and its varieties, Hyacinthus azureus, H. ciliatus, Muscari elegans, M. neglectum, Brodiaea uniflora, Bulbocodium vernum, Scoliopus Bigelovii, Erythronium revolutum var. Johnsonii, Trillium ovatum, Scilla sibirica and var. alba, S. amoena and S. bifolia. These, however, do not exhaust the list of this particular family, but are mentioned as useful for spring flowering. One in this Order particularly beautiful is Tulipa Kaufmanniana, with perianth of bright yellow, slightly tinted with red outside. Clumps of this erect, showy species are in full bloom. Narcissus cyclamineus, a native of Portugal, should be noted for its long flowering period. Its unique habit and attractive flower makes it a warm favourite for the rock garden.

For early flowering and attractiveness the Saxifraga family is well to the front. S. Burseriana and its varieties play an important part and are all very beautiful. The variety minor is much in evidence, with its large, white flowers completely obscuring the foliage. S. Irvingii is also a handsome plant, and seems to increase without much trouble. It is at its best on the side of the moraine and has wintered well. S. oppositifolia, with its brilliant pink carpet of flowers, is one of the best early-flowering plants of the Order. Two dark forms collected from the Scottish mountains are very floriferous, and among their new peaty surroundings are quite at home. One fairly large mound is clothed with S. apiculata and its carpet of countless yellow flowers makes quite a show. It looks even more beautiful when viewed with the sun shining on it. Countless species and hybrids of the Kabschya section command attention in early spring, but, for safety, some should be grown in pots or planted out in the alpine house.

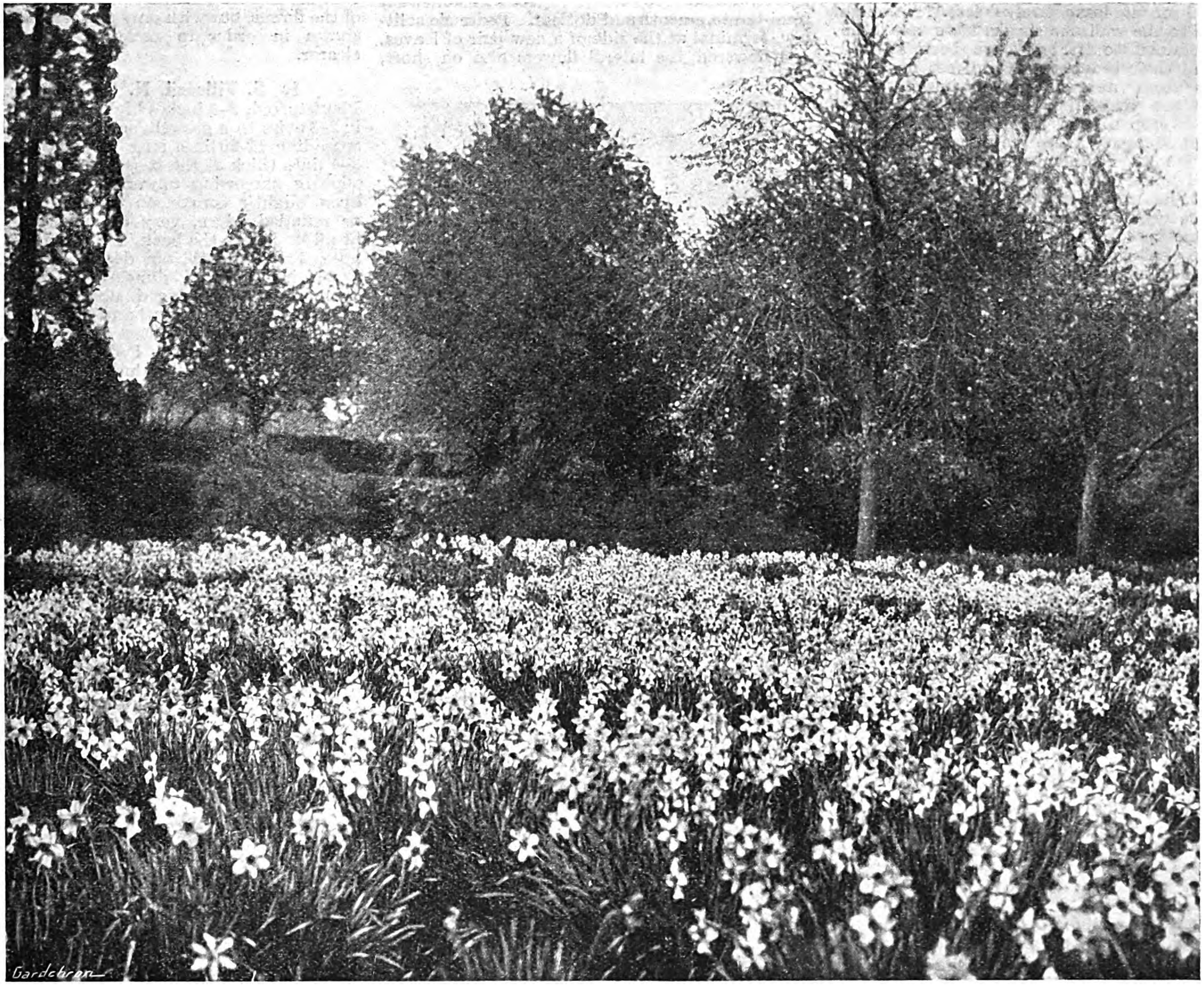

FIG. 130.—WIGGIE: PART OF THE DAFFODIL MEADOW.

Shortia galacifolia, from north Carolina, is very pretty among the rocks in a highly situated mound. The flowers are pale pink and may be considered an acquisition to the general collection of rock plants. S. uniflora var. grandiflora has opened one or two flowers which are larger and darker in colour than those of S. galacifolia. From its shady position it commands attention, and even when not in flower, its dark green foliage is very pretty. It is a native of Japan.

Iris reticulata and the varieties cyanea, histrioides and Krelagei, have been in flower for some time. They are most beautiful and do justice to their Natural Order. I. unguicularis and the variety alba, are still flowering and worthy of note.

Soldanella montana and S. alpina var. pyrolaefolia with their pendant, purple or blue flowers, are natives of the alps of Europe. They are at home among peat and granite chips, but this year are somewhat unfortunate, having lost many flowers as a result of the impudent attacks of the house sparrow, whose ravages among the yellow Crocus are well-known.

Primula denticulata and its beautiful hybrids are showing some fine spikes of well-balanced heads of flowers. The sub-species, P. cashmiriana and P. erythrocarpa, are also very fine. Their usefulness in spring cannot be under estimated, for they adapt themselves to the rock garden, pond, or any damp situations. P. crispa should also be included here as a good early-flowering species; easily cultivated and very floriferous. P. rosea and the variety splendens are also flowering and need no description to recommend them. P. frondosa is very dainty and attractive when grown *en masse*, and never fails to make a display. P. Juliana Gloria continues to bloom profusely; its brilliant magenta flowers with orange eyes appeal to lovers of the genus.

The sweet scent of Daphne Blagayana attracts attention to a large group of this beautiful evergreen shrub at the foot of a circular mound in the valley. It is a native of the mountains of eastern Europe, and is well suited for rock garden work.

Rhododendron repens has opened a dozen of the most beautiful crimson flowers. These are borne in full view on the top of a carpet of dark green leaves which, in turn, literally hug the ground. No description does justice to this wonder from Yunnan. A group of R. nivale, only a few inches high, with minute, purple-blue flowers and tiny foliage, is at present to be seen at its best. Rare, dwarf and a native of the Himalayas, this species has broken its last year's flowering record. R. intricatum, of shrubby habit and with pretty, purple-blue flowers, is adding its quota of brightness. It is very well suited for clothing mounds, and its shrubby, compact nature makes it useful. In a few days R. ciliatum will be ablaze with large, pink flowers, and from a distance commands attention. Another member of the same family, R. Metternichii, a native of Japan, is not quite at its best, but with continued good weather it may develop some excellent blooms. In the shade of the wild garden, R. cyanocarpum is an outstanding specimen of great beauty, with large, delicate pink flowers. It is one of the earliest-flowering species from Yunnan.

Under glass, some remarkably fine specimens are notable; these include R. Thomsoni, R. barbatum, R. arboreum and R. Hodgsonii, notable for their brilliance; and R. argenteum, R. floribundum and R. lochmium for their delicate tints. These and others of less outstanding beauty, such as R. lutescens, R. primulinum, and a pale form of R. racemosum, may be regarded as some of the best early-flowering representatives of this most charming family. *A. McCutcheon.*

TREES AND SHRUBS.

CAMELLIA JAPONICA.

The extraordinary crops of perfect flowers borne on two or three well-established plants of Camellia in the present season prompts me to write this note to advocate the more extensive planting of this beautiful shrub out-of-doors.

The plants in question are growing on a wall with an eastern aspect, have been planted nineteen years and, in spite of this partially unfavourable aspect, have made very fine specimens. Two of them are considerably above the height of the ten feet wall, and have a spread of at least twelve feet. Although attached to the wall, the shrubs have not been rigidly trained to it, but have been allowed to extend their branches several feet from the wall to form naturally-grown bushes. For the past ten years they have never failed to produce a crop of flowers, and at the present time (end of March) there are hundreds of well-formed blooms in full beauty, equal to any produced under glass. Under these conditions the Camellias make free growth and generally produce a terminal bud at the tip of each shoot, but sometimes two buds and occasionally three are carried and the free growth enables one to cut the blooms with quite long stems.

The plants have never been protected except occasionally to shade them from direct sunshine in the early morning should sharp frosts occur while they are in flower, and even this would not be necessary if a position with a western aspect were chosen for planting. Moderate spring frosts have little effect on the flowers, but if very severe frosts occur just as the petals are unrolling they become stained and lose their pristine beauty.

Apart from its value as a flowering shrub, there are few more desirable ornamental foliage shrubs than the Camellia, as its beautiful, glossy foliage is highly attractive at all times. Under outdoor conditions the plants enjoy remarkable freedom from their indoor pests—mealy bug and scale—and the leaves remain perfectly clean.

It is usually considered that the Camellia prefers a fairly retentive soil, but the specimens referred to are planted in light, sandy soil, and I am convinced that it is because of this that they grow so freely, flower so profusely, and suffer so little damage from frost. When planted on heavy soils these should be thoroughly worked and perfect drainage should be provided. *W. Auton.*

LARGE-FLOWERED CLEMATISES.

Members of the patens group of Clematis are most valuable as companions to rambler Roses on account of their early-flowering season, and the pruning of them may be accomplished before the Roses are at their best.

The blooms are large and handsome, varied and vivid in colour, while the plants respond to the same culture as that afforded to climbing Roses, and the majority of them are free-flowering.

President, with rich metallic violet blooms and white anthers, ranks amongst the most noteworthy; it is a fine variety, and in favourable seasons will produce a second crop of blooms in the autumn. Mrs. George Jackman, the best of the early-flowering, white Clematises, has large flowers with dark anthers; it is a free-grower and is in all ways a most desirable variety.

Nellie Moser, with satiny-crimson blooms, shaded with lighter tones, is an attractive form, while Belle of Woking is one of the best of the double sorts, with fine, silvery grey flowers.

Lady Londesborough has fascinating, silvery-grey blooms with pale lilac bars and they are produced with great freedom, while Maiden's Blush, with large white flowers shaded with mauve, finds many admirers. J. Gould Veitch, with double, pale silvery-mauve blooms, is useful for decorative purposes when cut, and Marcel Moser, with large, blush-pink flowers marked with cream, is both hardy and free-blooming.

The pale lavender flowered The Queen is another useful variety, especially for providing blooms for table decoration. *G. L.*

MESEMBRYANTHEMUM.

(Continued from p. 252.)

12b.—STERROPETALUM, N. E. Br.

Stemless, perennial, tufted. Leaves opposite, shortly united at the base, sub-terete or somewhat semi-terete, smooth and dotless. Peduncle solitary, terminal at the side of a new pair of leaves, 1–3-flowered, the lateral flowers also on short, bracteate peduncles, bracteate. Pedicels short. Calyx very shortly produced into a cup or tube above its union with the ovary, unequally 5-lobed above. Corolla not closing day or night after it has once expanded; petals numerous, in several series and passing into staminodes, narrow and stiff to the touch, all shortly united into a ring or tube at the base. Stamens connivent for half their length with the upper part, abruptly deflexed and tortuous, bearded at the basal part. Stigmas 5, ascending-spreading. Ovary inferior, flattish or very slightly convex on the top, 5-celled, with the placentas on the floors of the cells. Capsule shortly obconic, flattish at the top, and the sutures slightly raised at the central part only, with five valves and cells; valves recurving when expanded, with the expanding-keels contiguous into a very stout, convex, central keel, with broad marginal wings that are not united in pairs between the valves; cells imperfectly roofed with small, membranous and flexible cell-wings, whose edges do not meet, and without a tuberole on the outer wall. Seeds not seen.

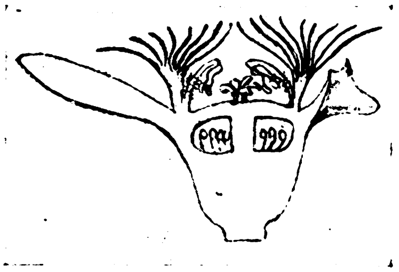

FIG. 131.—STERROPETALUM PILLANSII, N.E. Br.
Diagram of flower-structure, enlarged two diameters.

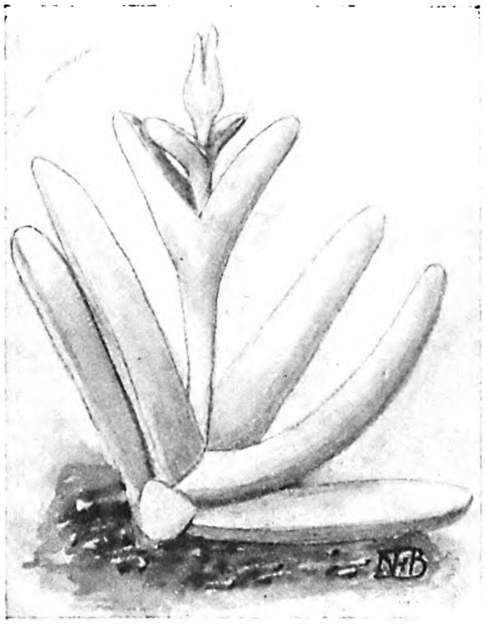

FIG. 132.—STERROPETALUM PILLANSII, N.E. Br.
Natural size.

The only known species is S. Pillansii, N. E. Br., a native of Little Namaqualand.

The name is derived from the Greek, *sterros*, stiff, and *petalon*, a petal, in allusion to the stiff petals, a character that is otherwise only known to occur in this family of plants in the genus Dactylopsis, near which for the present I place it, although its foliage is quite different in type from the leaves of that unique plant. Fig. 131 represents a diagram of the structure of the flower, but with only two series of stamens shown in order to make their arrangement clearer.

1.—S. Pillansii, N. E. Br. (Fig. 132).—Plant tufted, 2–3 inches high, glabrous. Leaves in 2–3 pairs to a growth, sub-erect to ascending-spreading, 12-20 lines long, 3–5 lines broad, and 3–4 lines thick at the base, slenderly finger-like, slightly narrowing upwards to a very obtuse apex, slightly convex on the face, with obtuse or rounded edges, very rounded and scarcely at all keeled on the back, nor compressed at the apex, firm, smooth, not dotted, glaucous-green or whitish-green. Peduncle erect, ½–1 inch long, compressed and 2-edged, about 1½-line broad, of a much paler green than the leaves. Bracts about six lines long, united at the base, resembling reduced leaves. Pedicels about 3 lines long, erect. Calyx produced above the ovary into a slight tube about ¾-line long, with the ovary-part somewhat ovoid-conical, and the lobes like reduced leaves, the two longer are 5–6 lines long and the others 3–4 lines long, all ascending-spreading when expanded. Corolla 6–9 lines in diameter, not closing after it has expanded, but remaining open day and night, for three weeks or more, not scented; outer petals about 4½ lines long and ½-line broad, arched-spreading and shorter than the calyx-lobes, narrowly linear-cuneate, sub-acute or obtuse with a small point at the apex; the inner gradually shorter, narrower, filiform and acute, less spreading, and the innermost connivent, filling up the central part of the flower so as to make it flat at the top and concealing the stamens, all of them quite stiff to the touch and united at the base into a very short tube about ¾-line long, white, with a faint yellowish tinge at the central part of the flower; the innermost or staminodes are densely bearded and matted together at the middle. Stamens 1–1½ lines long, filaments very slender at the deflexed tortuous part, white, anthers yellow. Stigmas 1 line long, stout, subulate, smooth, and green. Glands none or obscure. Ovary green on the top. Capsule 3–3½ lines in diameter when closed and 5 lines when expanded, dull brown within, with the keels and marginal wings of a lighter brown, otherwise as described under the genus.

Little Namaqualand: Locality unknown, Pearson! Pillans 5705!

This plant was sent to England in 1910 or 1911 by Professor Pearson, but never flowered. Last year I received it from Mr. N. S. Pillans, and as it has flowered, I am now able to describe it. In foliage it somewhat resembles young plants of Roodia digitifolia, N. E. Br., but the leaves are more slender, and in its stiff petals and the long duration of its flowers it resembles those of Dactylopsis digitata, N. E. Br. The development of its flowers has been exceedingly slow, possibly because the year was so sunless and cold. In September last, the peduncle bore one pedicellate flower between the two bracts at its top, and, at the end of December, the second flower on the peduncle, developed from the axil of one of the bracts, and also with a short bracteate peduncle and a pedicel of its own, was still in very immature bud. My sketch (Fig. 132) represents a growth of the plant in this state, with the decayed flower omitted. *N. E. Brown.*

(To be continued.)

THE GENUS PRIMULA.

(*Continued from p. 252.*)

APOCLITA (Balf. f.). Select P.
(Muscaroides.)

This species produces a weak rosette of pale green, paper-like leaves, with oblong, spathulate, blunt blades, about five-eighths-of-inch across, tapering to narrowly-winged stalks, in all about two inches long, the margins are furnished with small, regular, saw-like teeth, and are more or less fringed with fine white hairs, the upper surface is rather sparsely covered with fine, white down. The slender flower stem is six to fourteen inches tall, and is more or less coated with yellow meal above; it bears a few-flowered spike of stalkless, rich, deep purplish-blue, fragrant, tubular blossoms about five-eighths-of-an-inch long, with cylindrical tubes about half-an-inch long, coated on the outside with meal, and smooth inside. The corolla is concave, and has a mealy eye, and is divided into five oval or obovate segments.

Flowers in July. The plant is found in moist alpine meadows and slopes in open situations on the Londre Pass, Tsarone, south-eastern Tibet, at 13,000 feet above sea-level.

Culture: as for P. adenantha.

ARCTICA (Koidz.). Arctic P.
(Macrocarpae.)

This tiny species produces a compact rosette of smooth, lance-shaped, coarsely and bluntly toothed leaves, about one-and-a-quarter-inch long and five-sixteenth-of-an-inch wide, broad and blunt at the tip, and narrowing towards the base into a winged stalk. Flower stem about two inches tall, bearing an umbel of usually three comparatively large, rich, deep violet blossoms on stalks little more than one-eighth-of-an-inch long. Corolla with a long tube and five roundish, short lobes.

P. arctica is found in Tschuktschor, Port Providence, north-eastern Siberica, and the conditions under which it grows have not been recorded. Discovered in 1911.

Culture: Fibrous loam, in a moist, open spot, would probably suit it.

AROMATICA (W. W. Sm.). Scented-leaved P.
(Malvacea.)

A very Mallow-like species with a loose tuft of very thin, aromatic leaves on slender, flexuous, downy stalks; one to two inches long, with broadly oval blades, heart-shaped at the base, their margins are divided into seven to nine rounded lobes, with minute hairs on their edges; both surfaces are sparsely clothed with minute down. Flower stems six to eight inches tall, downy, bearing a very loose spike of two to five rose-coloured flowers with green tubes. The corolla is about five-eighths-of-an-inch long with a cylindrical tube three-eights-of-an-inch long; its lobes are narrowly egg-shaped with a somewhat wide notch in the centre.

Flowers in July. This plant frequents moist situations on limestone cliffs in western Yunnan, at 9,000 to 10,000 feet above sea-level.

Culture: Loam, leaf-soil and limestone chippings, in a moist, shady spot; protect from damp and frost in winter.

ATRICAPILLA (Balf. f.). Smoky-blossomed P.
(Muscaroides.)

A desirable species with a loose rosette of oblong, oval, or spathulate-oval, blunt or pointed leaves, with blades one to four inches long, gradually tapering to very short stalks; their margins are bluntly and irregularly toothed and slightly fringed with fine hairs, both surfaces being free from meal. The flower stem is slightly mealy below and densely so among the flowers, it reaches a height of four to fifteen inches, and bears a terminal head of many lavender, or smoky periwinkle-purple blossoms with mealy throats. The corolla is about half-an-inch long and a quarter-of-an-inch wide, with oval, slightly notched lobes.

Flowers in June and July. Some dwarf specimens are quite devoid of meal. Grows on damp, shady banks, near Temo La and Philé La in south-eastern Tibet, at 12,000 to 14,000 feet above sea-level.

Culture: Fibrous loam, leaf-soil and grit, in rather damp, shady spot; protect from damp in winter is indicated. *A. W. Darnell.*

(*To be continued.*)

HOME CORRESPONDENCE.

[*The Editors do not hold themselves responsible for the opinions expressed by correspondents.*]

The Finest Flowering Tree.—I agree with Mr. Clarence Elliott's statement, as quoted by your South African Correspondent, Mr. C. E. Butters, that in the Flamboyante (Poinciana regia) we have the finest flowering tree in the world. In Colombo, Ceylon, there are avenues and avenues of these trees whose appearance, when in full blossom, is indescribably magnificent. Often this tree is so laden with its vivid scarlet spikes of bloom as completely to hide its Acacia-like foliage, and to those who have seen it in its glory it must for ever remain a wonderful and ineffaceable memory. There is another tree, Amherstia nobilis, which is often called the loveliest flowering tree. Its splendid spikes of rosy, waxen flowers, and its dark green foliage, give it, perhaps, a little more choice and exotic character than the Poinciana. I was on the Governor's staff in Ceylon many years ago when Prince Henry of Prussia brought a naval squadron from Germany to the Far East. During his stay in Ceylon he was invited to plant a tree in the famous Peradeniya Gardens, near Kandy, and the Curator selected Amherstia nobilis as being, in his opinion, the most beautiful flowering tree in the world. But I, personally, give my vote to the more dazzling Poinciana regia. *C. L. Ward-Jackson, Major, Bryngarw, Aberkenfig, South Wales.*

Degeneration of the Strawberry.—As is only too well known, there is a very serious degeneration of the Strawberry plantations in many parts of this country, and the outlook is not hopeful, for it is spreading rapidly. It was about seven years ago when it was noticed here that something was amiss with the Strawberry beds. Groups of plants just starting into growth at the end of March, took on a brownish and withered appearance, and the young leaves would not come away from the crown; there was no sign of aphis or other pests. The following season, strong runners were taken in the usual way from the best plants, and when put into six-inch pots looked very healthy, but by September, fifty per cent. were affected and were destroyed. Since then it has been difficult to get a decent Strawberry plant. Although I have endeavoured in a careful survey of the situation to get at the cause of the trouble, up to the present a blank has been drawn. Without doubt the trouble is constitutional. It is not concerned whatever with insect pests, for the first sign of trouble may be noticed months before the effect of the contamination is really apparent, and the first indication is the unusual desire of the plant to bloom. The Holly tree in a young, vigorous state will concentrate on growth and care little for bloom and berry, but in its latter years, when the cells and tissues have hardened, it will be noticed that it is frequently covered with berries. The Holly appears then to be anxious to perpetuate its species, and it would seem that the Strawberry, feeling the stranglehold of the disease, is desperately anxious to bloom and do likewise. I have noticed plants of The Duke variety covered with masses of undersized blooms months before the plants actually die. The plant, instead of vegetating and functioning normally, from some cause, hardens. The condition and appearance of an infected Strawberry bed are similar to that of early Potatos where sets have been saved continuously from the one stock and planted for several years. The spot disease of Zonal Pelargoniums is also similar in respect to the stunted curling of the leaf-stalk, and a reddish-brown appearance. I am certain that there is no cure for the disease. Preventive measures, and possibly classification of certain areas, are indicated. The question of varieties being immune, or otherwise, does not arise at present, as all known sorts appear to suffer. I am inclined to think that concentration on the survival of the fittest, frequent moving of the beds, and propagation from maiden plants, is, at the moment, the best one can do. In the autumn of 1926, I came across a lady amateur grower whose Strawberry beds were as an oasis in a desert. The garden was divided into six parts, and the Strawberries were grown in rotation. There were always three Strawberry beds, but they were never kept after the third year. I secured runners of this unknown strain, and from maiden plants I obtained the best lot of crowns, for this year's work, inside and out, that we have had for years. Previous to this, we purchased a new stock of The Duke from a supposed reliable source, but at the end of the year only about a dozen plants were left to linger a few months longer. One naturally turns to our research stations, but my experience in this direction has not been very helpful. It becomes more and more apparent that some organised method of research into the whole question is absolutely essential. The Board of Agriculture should take steps to put some machinery in motion to get at the root of the trouble, for the position is becoming acute in wide areas. *G. W. Stacey, Chorley Wood Cedars.*

Lime or Chalk.—I was very interested in the note on "Lime or Chalk" (March 10) by Dr. Marie Stopes, for I have long felt that it is only the conservative British nature with regard to everyday customs which makes the average gardener apply lime instead of chalk when his ground requires it. The point is worthy of consideration. It has already been stated that so far as cost is concerned, chalk is cheaper, and, so far as its chemical properties are concerned, it is one stage nearer to giving the desired effects. The qualities of lime as an insecticide are often over-rated, for quicklime must often be slaked and the heat given off, which I suppose is its chief insecticidal value, is lost before it is dug into the ground. It is well-known that heavy soils are rendered more porous and workable by the flocculating effects of lime on the clay; thus it is clear that the physical effects of liming are as valuable as the chemical effects. These physical changes in the soil will be realised to the full extent by the application of chalk as well as of lime. Reference to heavy soils reminds me of another illustration of an apparent conservative practice with regard to rendering the soil more fertile. At this time of the year, growers of Cabbages are in the habit of applying nitrate of soda to their crops to increase their productiveness, and there is no doubt about the benefits derived therefrom. Where the soil is inclined to be heavy, however, in course of time considerable damage is done to the texture of the soil. Nitrate of soda is a deflocculator of clay, and so, from year to year, the soil becomes more and more sticky and unworkable, and this state cannot be rectified in the ordinary way by the application of an alkali such as chalk. This fact may have been partly responsible for the reputation which nitrate of soda has for "impoverishing" the soil after its use. Yet how many, I wonder, who need the use of a nitrogenous stimulant for Cabbages in early spring have tried nitrate of lime, the beneficial effects of which, as regards nitrogen, are as good as those of nitrate of soda, and, in addition, the lime will be added to the soil and render it more workable instead of more sticky. Until a few years ago, nitrate of lime was easily obtained at a cost below that of nitrate of soda, but the gradual decline in the demand has now almost completely withdrawn it from the market. Is this due to the conservative nature of the average British gardener, or is there some other reason? The only point I can find against it is that it is possibly not quite so easy to handle as nitrate of soda, but I cannot think that this would completely outbalance its merits. However, it is another point worthy of consideration, and your readers may have some interesting and useful views on the subject. *A. Donald Blaxill.*

LANARKSHIRE STRAWBERRY DISEASE.

The Strawberry industry in Lanarkshire began at Hamilton and Uddington, about the year 1869, and from these places plants were taken to Carluke, about 1872. The varieties grown in those early days included Vicomtesse Héricart de Thury, Elton Pine and Black Prince; Strawberry-growing in the Clyde valley soon became a profitable industry, and the acreage increased rapidly. Towards the close of last century, when the variety John Ruskin came into popularity, the usual rotation was four crops of Strawberries with an intervening crop of Potatos. During the war, the land probably suffered considerably in the matter of cultivation, and in various districts, from 1920 to 1922, disease made its appearance and spread rapidly, until at the present time the industry is in a perilous state, and growers are seeking other outlets for their capital.

Dr. Claude W. Wardlaw, B.Sc., F.R.S.E., Lecturer in Botany at Glasgow University, was appointed to make an investigation into the disease, and his first impressions were given in a pamphlet published in December, 1926; after two years of research in the field and the laboratory, a sufficiently good general understanding of the problem has been reached, so that it is now possible to make a number of detailed recommendations for curative treatment of the diseased crops. These are contained in a supplementary report issued in pamphlet form quite recently.

In Dr. Wardlaw's introductory observations, comparison between the early days of the industry and the present time shows that cultivation is not so good as it used to be, and the plants do not receive the same attention, nor are they treated as they used to be in the matter of farmyard manure, while the ground is not always worked under the best conditions.

A general need is felt for the introduction of some better varieties, but opinion is divided on the subject of lime, and one is told of fields broken out of fallow and never limed for forty years, although bearing Strawberries and other crops most of the time. Neither the general appearance of the fields nor cropping are so good as formerly.

The disease, which is seen at its worst in May and June, is definitely diagnosed as a root-disease due to the destruction of the root-system by soil fungi under soil conditions unfavourable to the plant, and it is pointed out that the disease is worst when the drainage is bad.

Several lines along which improvement may be sought include, liming to improve the surface soil and modify the underlying sticky soil or clay; and increasing considerably the depth of effective cultivation and securing better drainage by laying tiles or perhaps by penetrating the clay stratum and allowing the water to percolate into still lower layers.

Discussing the question of lime, Dr. Wardlaw states that in Lanarkshire there is a belief, of unknown origin, that Strawberries do not like lime, but in the agricultural literature on this subject the fact emerges that the Strawberry thrives both on acid and alkaline soils, provided that other conditions are favourable. Thus, Dr. Wardlaw in recommending the use of lime, is not thinking specifically of the plant, but rather of soil improvement, and a chemical analysis showed that the typical holm soil is depleted and poor, both in lime and carbonates. The results of liming, it is pointed out, should not be measured by one crop alone, but rather by a series of crops, as the action of lime is gradual and continued. Further, the work which lime does in the soil cannot be reproduced by applying other manures.

The present investigation has demonstrated the difficulty which the Strawberry plant encounters in rooting into the stiff soils of portions of the Clyde valley fruit fields; the poor and scanty root-system produced when the Strawberry roots into a soil where the tilth is poor and the texture is close and compact; and the susceptibility of the roots to disease, and their liability to attack by parasitic soil organisms under such conditions. Strawberries do not like cold soil; bad drainage and lack of adequate ventilation rapidly lead to the death and decay of the roots, but cultural experiments showed clearly that, provided the disease is not too far advanced, the plants, if grown in good soil, may recover. Further, well-drained soil in good heart, when inoculated with "diseased" soil had no effect on plants that were previously maintained in a state of health by being grown in good soil.

A comparison of the fruit rotations practised in Norfolk, East Lothian, Holderness, Carse of Gowrie and Northumberland, shows that the Lanarkshire rotation is the poorest of all and is not such as to make for the maintenance of good soil conditions and that high state of fertility required for successful cultivation.

The following rotation might be used with advantage if, at the end of Strawberry cropping, the ground is moderately clean and free from perennial weeds. In the first year plant Strawberries, and crop them from the second to the fifth year. Grub out the old Strawberry plants by the end of August of the fifth year, and put in a catch crop of Rape. In the sixth year grow Oats or other seed crops; in the seventh, Clover and hay; in the eighth year, use the land for hay or grazing; and in the ninth year crop it with Potatos.

If the ground is weedy, the following rotation would be more suitable:—First year plant Strawberries, and crop them until the fourth year, when a catch crop may be put in as previously advised; in the fifth year, crop with Potatos or Turnips, or allow the land to lie fallow.

The essential conditions for successful cultivation of the Strawberry on a large commercial scale are detailed as follow:—

(1) Choice of good soil that is in a high state of fertility; (2) thorough drainage; (3) a plentiful supply of food materials, especially farmyard manure; (4) an adequate supply of humus to improve the soil texture; (5) a good, deep, friable tilth that will allow of the necessary freedom for root development; (6) thorough cultivation; (7) a good stock of plants, well selected and rogued, and well suited to the type of soil; (8) a rotation of crops that brings the soil into a very high state of fertility, at the time of cropping; and (9) the choice of the best fields in the district.

Varieties such as John Ruskin should be avoided for the stock at the present time is not good, and the fruit itself, as a commercial proposition, has many disadvantages.

EXPERIMENT WITH MILLIPEDES.

During the past two or three years complaints have been received from owners of gardens about the damage done by millipedes to Potatos and other crops, and in consequence an investigation into the trouble has been made.

There are two species of millipedes that appear to be very destructive in gardens, viz., Julus terrestris and Julus pulchellus, sometimes known as Blanjulus pulchellus, and it is the latter which causes the most damage. It is a small, slender creature about half-an-inch in length when full-grown; in colour it is yellowish, with a row of crimson or purple spots along each side, a characteristic by which it may always be recognised.

In the Julus family the breeding season is during May, June and July. The female burrows down into the soil and lays her eggs in a kind of nest made from small particles of soil. One authority places the number of eggs laid at from sixty to one-hundred. The eggs hatch in about fourteen days.

The plants attacked in the gardens in question were Potatos and Strawberries. Whole Potatos were hollowed out and a large number of millipedes were found in the shell of the tuber. In the Strawberry plot, most of the damage was done at the stage when the fruit was ripening, large, partly ripened fruits being hollowed out and a number of millipedes could be seen curled up in the cavity made. The disgust of the picker may well be imagined when on picking a fully ripened berry, a number, of these creatures would be found feeding or resting in a hollow formed on one side of the fruit.

In the early part of the present year an attempt was made to destroy the pest in a Strawberry bed in a private garden, and before anything was applied, an effort was made to ascertain the number of millipedes present in the soil. To do this, one square foot of soil was dug out of the bed, placed on a board and broken to pieces. An approximate count gave the number as twenty-seven, and this showed a high concentration in the soil.

The plot was divided into three parts; one was used as a control, and the other two were treated with powdered naphthalene and calcium cyanide respectively. The naphthalene was applied on the surface of the soil at the rate of two ounces per square yard, and well watered in. The calcium cyanide was applied in a liquid state at the rate of one pound to thirty gallons of water, and two gallons of the liquid to each square yard of soil. Calcium cyanide is rather poisonous, and care should be taken when mixing it not to inhale the fumes.

Before the application of any material was made, the surface of the soil was forked lightly in order to facilitate the entrance of the liquid into the soil. After the soil had been treated, a section of soil was again taken from each, turned out on the board, and an attempt was made to count the dead and alive millipedes in each. In plot No. 2, treated with naphthalene, the section of the soil yielded a count of seventeeen dead millipedes and ten alive. This was fairly promising, but not wholly effective, and it has been suggested that a stronger dressing might be more effective. In plot No. 3, treated with the cyanide, the section of of soil gave twenty-six dead and only three alive.

The results in the case of cyanide follow very closely the work which has been done in connection with wireworms, and in the opinion of the writer this material should prove the most effective in destroying millipedes in the soil. *T. G. Bullock.*

FRUIT GARDEN.

LARGE GOOSEBERRIES.

Given an open space on land well-manured and trenched, the following varieties of Gooseberries will bear fruits of large dimensions, useful for all purposes. A surface dressing of lime and soot forked in lightly, will sweeten the land and increase fertility.

Lancer has greenish-white, oval and very large berries that are smooth and of excellent flavour.

Drill is a good late variety, with smooth, yellowish-green fruits of enormous size, and excellent flavour.

Ringer has large, smooth, golden-yellow and well-flavoured berries; while those of Whitesmith are white, large and of good flavour; it is very prolific, and is useful for dual purposes.

Lord Derby, with large, smooth, red fruits, is a great bearer; Dan's Mistake is a fertile variety with big, light red berries of good flavour; and those of the prolific Antagonist are creamy-white, hairy, and richly flavoured.

Catherina has golden-yellow, very large and well-flavoured fruits; its growth is rather spreading; the fertile Trumpeter has large, yellow fruits that are large, smooth, and well-flavoured; and those of London are of large dimensions, purple-red and smooth; it is considered one of the largest fruited Gooseberries known.

Bobby, with very large, red, richly-flavoured berries, is a rather weak grower; and Telegraph bears very large, long, deep green, smooth and highly flavoured fruits. *Pomona.*

VEGETABLE GARDEN.

THE EDIBLE ICE PLANT.

The Mesembryanthemums, or Ice Plants, belong to the Ficoidaceae family, and their natural habitats are the sandy tracts which border the oasis of the great deserts. In northern Africa these regions are aglow with the vivid and varied hues of the Daisy-like flowers of the Ice Plants, which add brilliance to the already intense colouring of those sunny places.

As everyone is aware, Mesembryanthemums are great favourites for planting amid the fancifully arranged rocks which garnish the gardens of our seaside resorts, but the crystal, or edible Ice plant, Mesembryanthemum cristallinum, that is a native of the Canary Islands, is less widely known. Like the rest of its family, it is really a perennial, but when used as a vegetable it is treated as if it were an annual.

Its cold, succulent, broad leaves are dotted all over with tiny crystalline globes, which look like small balls of ice. These leaves are an excellent substitute for summer Spinach, but they require to be boiled for twice so long as that vegetable. When taken out of the boiling water they should be plunged into fresh cold water, and then strained and treated like Spinach.

This edible Ice Plant will withstand any amount of sun and drought, and is therefore greatly superior to summer Spinach, which bolts directly the soil becomes dry, and which it is impossible to grow satisfactorily in light, warm ground.

However, like many another denizen of sandy places, this Mesembryanthemum takes very kindly to a few of the plant luxuries and comforts which nature denies it in its native habitat and is much improved by them.

Its leaves become larger and more tender if a generous amount of leaf-mould is mixed with the soil, and it enjoys a good soaking in very hot weather, although it will exist quite well without any watering.

The extremely fine seeds should be sown in frames or boxes from the middle of April to the middle of May, and protected from frost. When large enough to handle, the seedlings may be removed to their permanent quarters, if all fear of frost is over, or they may be pricked out, four inches apart, into another frame, or in a position in the open.

Great care should be taken to transplant the seedlings with a good ball of earth round their roots, and this is best done after rain, as a check impairs the tenderness of the leaves. In June, the little plants may be put into their permanent quarters, which should be a sandy bed containing plenty of leaf-mould. Throughout the summer the ground around them should be hoed frequently.

The early produced leaves of the edible Ice Plant are all basal, but the later ones are borne on stems, and those at the growing apex should alone be eaten at this stage, although the early basal ones are all edible. Mesembryanthemum cristallinum yields leaves for cooking until it is killed by the first frosts. *V. Slade.*

PUBLIC PARKS AND GARDENS.

Turton Urban District Council has acquired one hundred acres of land comprising the whole of the Oaks and Birtenshaw estates, as a private open space for all time.

The Worcester City Playgrounds Society proposes to develop Pitchcroft on Severnside as a recreation ground, and the Town Council is recommended to make a grant of £5,000 towards the estimated cost of £15,000.

Middlesex County Council has received sanction from the Ministry of Health to borrow £5,687 towards the cost of the acquisition by the Southgate Urban District Council of about forty-four acres of land at Arnos Grove for an open space.

SOCIETIES.

TAMAR VALLEY SPRING SHOW.

March 28 and 29.—The Tamar Valley Spring Show, which was held at Plymouth, on March 28 and 29, although to some extent affected by the weather, provided a glorious spectacle, afforded by boxes of packed flowers, and tier upon tier of wonderful Narcissi, Tulips and Anemones.

Undoubtedly the finest blooms were displayed by Mr. E. B. Champernowne (Fig. 133), and included amongst them were fine specimens of Narcissus Fortunei and N. Beersheeba.

The competitions for *The Gardeners' Chronicle* Medal, awarded to the exhibitor securing the most points in the show, resulted in Mr. F. Rogers, of St. Dominic, and Mr. J. H. Langman, of Tamerton Foleot, securing an equal number of points. The chief winners in the packed flowers section were Mr. S. Wallis, of Lissadel, St. Buryan, for the best travelled box of Trumpet Narcissi (this box also won the Lancaster Cup); Mr. E. B. Champernowne, who exhibited a fine box of N. ornatus maximus, and Mr. J. H. Langman, who secured several prizes.

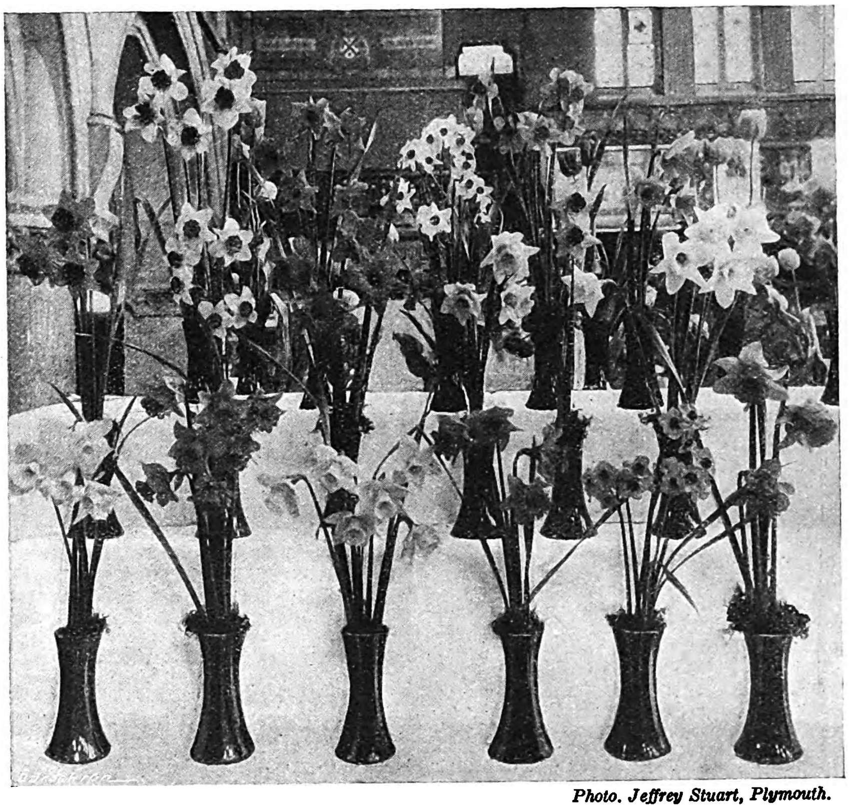

Photo. Jeffrey Stuart, Plymouth.

FIG. 133.—FIRST PRIZE GROUP OF CHOICE DAFFODILS AT TAMAR VALLEY SHOW; EXHIBITED BY MR. E. CHAMPERNOWNE.

Anemones were well shown by Mr. R. Uren, of Penzance, and the premier Violet awards went to Mr. H. Stone, of Fowey.

Among the outstanding exhibits of the show were the wonderful competitive and non-competitive exhibits of Tulips, staged by Messrs. Counter and Sons, and flowering shrubs and general nursery stock were well shown by Messrs. Treseder and Co., and Messrs. Chalice.

The best trade exhibit of Narcissi was staged by Mr. J. C. Martin, of Truro; it included fine blooms of the variety Mrs. E. Martin, which should have a great commercial future.

The total attendance at the show was in the neighbourhood of fifteen thousand. Conferences and lectures were held, and a number of very valuable educational exhibits were also staged.

ROYAL HORTICULTURAL.

April 11 and 12.—On account of the Easter holidays the customary fortnightly meeting and show of this Society was held at Vincent Square, Westminster, on the Wednesday and Thursday. The hall was well filled with a great variety of exhibits, so that there was a much better show than might have been anticipated. Orchids were again shown extensively, as also were Daffodils, of which there were many novelties submitted to the Committee. The general floral exhibits included forced shrubs, rock gardens, Roses and Carnations. There was no exhibit before the Fruit and Vegetable Committee.

Orchid Committee.

Present: Sir Jeremiah Colman, Bt. (in the chair), Mr. Gurney Wilson (Hon. Secretary), Mr. Fred J. Hanbury, Mr. Lionel de Rothschild, Mr. S. W. Flory, Mr. Fred K. Sander, Mr. H. G. Alexander, Mr. J. E. Shill, Mr. Charles H. Curtis, Mr. A. Dye, Mr. J. Cowan, Mr. A. McBean, Mr. T. Armstrong, Mr. E. R. Ashton, Mr. Wilson Potter, Mr. Stuart Low and Col. Stephenson Clarke.

First Class Certificate.

Odontoglossum crispum var. Carl Holmes.—An exquisitely beautiful, large-flowered, finely shaped variety; white, with a little rose shading on the lower sepals, and red-brown markings on the white, yellow-disked lip. Shown by Mrs. Carl Holmes (gr. Mr. W. J. Penton), The Node, Welwyn.

Awards of Merit.

Odontioda Van Eyck (*Oda. Coronation* × *Odm. hyb.*).—A handsome Orchid with ruby-red colouring on the centre and base of each petal and sepal, the colour paling to rose at the margins; lip paler rose-lavender, with red and soft purple markings below the dark yellow disk. Shown by J. J. Bolton, Esq. (gr. Mr. S. Lyne), Claygate Lodge, Claygate.

Odontioda Rubicon (*Oda. Coronation* × *Odm. hyb.*).—A beautiful hybrid with large, rounded flowers of excellent form. The sepals and petals are rich red, with a little rose shading at the tips of the lower sepals. The lip is intense red, with a cream-coloured band near the apex and a golden, red-lined disk. Shown by F. J. Hanbury, Esq. (gr. Mr. Farnes), Brockhurst.

Groups.

J. J. Bolton, Esq. (gr. Mr. S. Lyne), Claygate Lodge, Claygate, Surrey, exhibited a glorious display of Dendrobiums. The group included forty-one plants of D. Thwaitesiae, all in sixty-sized pots, and flowered with amazing profusion; in some instances there were sixty golden flowers on one stem, and often there were three or four flowering stems on a plant. All these examples of skilful culture were propagated at Claygate Lodge four years ago. Behind these were about a score of plants of D. Austinii (Ainsworthi × Cybele nobilius), also splendidly flowered. The Orchid Committee recommended a Gold Medal for this group, and a Silver Lindley Medal to Mr. Lyne.

Messrs. Sanders contributed a large group, consisting mainly of Cymbidiums, notable varieties of C. Erica Sander, C. Vesta, C. Ceres, C. Diana, C. Pauwelsii, C. Alexanderi, C. Swallow, and C. Canary. A conspicuous plant was C. Joy Sander var. White Cap, with a pure white lip with brown markings at the apex, and golden, bronze-tinted sepals and petals. Messrs. Sanders also showed Pleurothallis Birchenhallii, Oncidium Papilio, Trichopilia suavis, finely flowered; Coelogyne Lawrenceana and many fine plants of Dendrobium Austinii.

Baron Bruno Schröder (gr. Mr. Shill), the Dell Park, Egham, showed Sophro-Laelio-Cattleya Mikado (S.-L.-C. Hirohito × C. Empress Frederick), and S.-L.-C. Tokio (S.-L.-C. Hirohito × L.-C. Ivanhoe), and a spike of Cymbidium Shillianum (Pauwelsii × Holfordii), with pale yellow sepals and petals, and brown marks on the light yellow lip. Mrs. Carl Holmes (gr. Mr. W. J. Penton), The Node, Welwyn, showed a nine-flowered specimen of the fine old Angraecum sesquipedale, and a splendid form of Odontoglossum crispum named Carl Holmes.

Messrs. Stuart Low and Co. showed several Cymbidiums, Dendrobium Thwaitesiae, D. Findlayanum, Brasso-Laelio-Cattleya Baroness, B.-L.-C. Albatross, Laelio-Cattleya Wellsiana, L.-C. Sunglow, Odontoglossum Jeanette, Coelogyne Sanderiana, and many other effective and interesting Orchids in their group.

Some capital Cymbidiums and Odontiodas were shown by Messrs. Cowan and Co., together with examples of Coelogyne Mooreana, Odontoglossum Gloriette, Miltonia Bleuana, Cattleya Tityus and Laelio-Cattleya San Juan. Messrs. Cowan and Co. also showed the beautiful, purple-hued Odontoglossum Omega var. splendens.

Messrs. Charlesworth and Co. contributed Oncidium Papilio majus, Cynorchis Lowiana, Leptotes bicolor, Bifrenaria Harrisoni, Cymbidium niveum, Laelia acuminata, and the vivid Masdevallia Heathi, in a group that included excellent Odontoglossums and Odontiodas, Laelio-Cattleya Estella and L.-C. Clotho.

Floral Committee.

Present Section A.—Mr. J. F. McLeod (in the chair), Mr. Arthur Turner, Mr. C. F. Langdon, Mr. William Howe, Mr. J. M. Bridgeford, Mr. M. Allwood, Mr. D. Ingamells, Mr. W. Cuthbertson, Mr. A. E. Vasey, Mr. J. T. West, Mr. George Churcher, Mr. D. B. Crane, Mrs. Helen Lindsay Smith, Mr. Charles E. Pearson, Mr. G. W. Leak and Mr. W. D. Cartwright, Secretary.

Section B.—Mr. Gerald W. E. Loder (in the chair), Mr. E. A. Bowles, Mr. Eric M. Marsden-Jones, Mr. G. Reuthe, Mr. F. J. Preston, Mr. W. B. Cranfield, Mr. James Comber, Mr. L. R. Russell, Lady Beatrix Stanley, Mr. Mark Fenwick, Mr. A. Bedford, Mr. G. Yeld, Mr. T. Hay, Sir William Lawrence, Bt., Mr. Charles T. Musgrave, Mr. R. C. Notcutt and Mr. N. K. Gould, Secretary.

Awards of Merit.

Anemone Pavoniana.—The rounded flowers of this very showy Anemone are of intense scarlet colour, and there is a small cluster of black stamens. Shown by R. D. Trotter, Esq., Leith Vale, Ockley.

Auricula Bookham Glory.—A very beautiful alpine variety. The large, perfectly round "pips" are of velvety purple colour with a broad white zone. Shown by Mr. James Douglas.

Anthurium Rothschildianum Comet.—The plant is much of Anthurium Scherzerianum type, but the spathe is immensely larger. The creamy ground colour is much more freely marked with irregular crimson spots than is the case with the hybrid Anthurium Rothschildianum. Shown by Messrs. L. R. Russell, Ltd.

Carnation Ivory.—This is an American perpetual-flowering variety of great value. The plant indicated a robust and free habit. The white flowers are large, fully double and deliciously fragrant; the petals are distinctly serrated. Shown by Messrs. Allwood Bros.

Hippeastrum equestre (?) var. ignescens.—Although inferior in garden value to the many hybrids now in cultivation, this plant has a certain grace and interest. The flowers, which were borne in two's, are of orange colour with white markings in the throat. Shown by E. M. Preston, Esq., The Warren, Hayes, Kent.

Primula rosea var. Brockhurst.—This is more robust than the type, and the larger flowers are of decidedly richer and brighter colour. Shown by F. J. Hanbury, Esq. (gr. Mr. C. Taylor), Brockhurst, East Grinstead.

Prunus incisa × speciosa.—The award to this hardy deciduous tree is subject to naming. The single flowers open widely and become quite flat. They are white and borne in clusters of two's and three's. Shown by Collingwood Ingram, Esq., Benenden.

Pyrus Malus, Russell's Weeper.—This is a very beautiful, perfectly pendulous little tree. The white flowers are freely produced in small clusters. Shown by Messrs. L. R. Russell, Ltd.

Groups.

Roses were shown in increased quantity and of very good quality. Messrs. W. Cutbush and Son and Mr. J. H. Pemberton both arranged very attractive groups of Polyantha varieties growing in pots. The former had very floriferous standards of Ellen Poulsen and Greta Kluis, rising above dwarf plants, of Golden Salmon, Eblouissant, Echo and Edith Cavell. At one end of their group, Messrs. W. Cutbush and Son placed a batch of a sweetly-scented variety named Sunshine. The flowers are of orange colour passing to a pale peach. They also showed Locarno, bright rose; Kerbergen, crimson, and Golden Salmon.

Many exceedingly good H.T. varieties were staged, as cut blooms, by Messrs. B. R. Cant and Sons. Lady Forteviot, which received a Certificate last year, evidently forces well. The shapely golden flowers are pleasantly scented. The rich yellow Mrs. Beatty was shown in quantity, and there were also vases of Lady Wakefield, Padre and Sovereign. Mr. E. J. Hicks included very good blooms of Clovelly, a fine pink H.T.; White Ensign, Mrs. Chas. E. Shea, and the new lemon-buff F. M. Vokes.

Greenhouse Carnations were shown in their accustomed quality and in quantity by Messrs. C. Engelmann, Ltd., Messrs. Stuart Low and Co. and Messrs. Allwood Bros. Messrs. Stuart Low and Co. also had a large exhibit of Acacias, Camellias, Ericas and Hippeastrums. In anticipation of the forthcoming show of the special Society, Mr. James Douglas set up an interesting collection of Show and Alpine Auriculas.

A long stretch of tabling was filled by Mr. G. H. Dalrymple with exceedingly good plants of Primula pulverulenta in several desirable varieties, and his coloured Freesias. The latter included some good seedlings, the rich yellow Buttercup; Old Rose, of deep pink and yellow tone; Conquest, mauve; and Jubilee, a large flower flushed with purple.

Flowering shrubs added considerably to the general effect of the show. Messrs. Hillier and Sons had a pleasing group of tall Japanese Cherries in considerable variety, Pyruses, Lilacs, and a few flowers of the Tree Paeony Stuart Low. Messrs. L. R. Russell, Ltd., grouped Wistarias, Cherries, Brooms, double-flowered Peaches and Magnolias. In a corner group, Messrs. W. Cutbush and Son had well-flowered Laburnums, Pyruses, Azaleas in variety, and a few alpines.

The rock garden exhibits were considerable and of varied merit, though all possessed attractions. Mr. Gavin Jones was very successful in his arrangement, and planted a good selection of Aubrietias, Fritillaria Meleagris and Gentiana acaulis. Messrs. Maxwell and Beale made a low rockery and used Azaleas, Brooms, Ericas and Myosotis.

In their well-planted rock garden, Messrs. W. H. Rogers and Son had good examples of Daphne Cneorum, Armeria caespitosa, Primulas and Lithospermum Heavenly Blue. Mr. Stephen Sims showed Pieris floribunda, dwarf Pinuses, Erica carnea and Auricula Dusty Miller. Messrs. Tuckers had many Aubrietias, such as Blue King, H. Marshall and Virginal, Saxifragas rocheliana lutea and Tynham Beauty.

In their interesting exhibit, Messrs. Waterer, Sons and Crisp planted Japanese Azaleas, Erythronium White Beauty, E. integrifolium, E. Johnsoni and Iris bucharica. Messrs. W. Wood and Son showed Azaleas, Viola Clarence Elliott, Aubrietias and Primulas. Messrs. John and A. H. Crook showed good Polyanthus as also did Mr. G. W. Miller, while Mr. R. V. Rogers had a good batch of Primula Barrowby Gem.

Mr. F. G. Wood had a very well-designed rock garden on a fairly extensive scale, and planted it with various Azaleas, Japanese Maples, Daphne Cneorum, dwarf Conifers, Primulas, Aubrietias and Muscaris. The Maytham Gardens had bold batches of Aubrietia Dr. Mules, A. Purple Robe, A. Satin Rose, Phlox Amoena and Primula Wanda. The Misses Hopkins made a pleasant little rock garden, and Miss Gladys Howse had miniature gardens.

In their rock garden, Messrs. M. Prichard and Sons planted Daphne Cneorum, Rhodora canadensis, various Primulas, Tulipa Clusiana, and Cyclamen repandum. Messrs. Hodgsons used Primulas, double-flowered Daisies and Aubrietias in their rock garden, while Messrs. Pulham and Sons planted Brooms and alpines, and Mr. G. G. Whitelegg had Ericas, Brooms and Primulas.

Narcissus and Tulip Committee.

Present: Mr. E. A. Bowles (in the chair), Mr. G. W. Leak, Mr. W. B. Cranfield, Mr. W. F. M. Copeland, Mr. P. R. Barr, Mr. F. H. Chapman, Mr. H. Smith, Mr. F. A. Secrett, Mr. F. Barchard, Mr. G. Churcher, Miss E. Willmott, Rev. Rollo Meyer, Mr. W. Poupart, Mr. J. D. Pearson and Mr. A. Simmonds, Secretary.

Awards of Merit.

Narcissus Clwyd (*Div.* 3*b*.).—A fine bi-colour Barrii variety, the segments of the perianth being large, rounded, and cream-coloured, while the prominent, spreading and crinkled cup has a rich golden-yellow and is edged with a broad orange band. The flowers were well borne on stout stems, and the foliage is also attractive. It was exhibited as a show variety by Mr. R. F. Calvert, Caverack, Cornwall.

Narcissus Bradwardine (*Div.* 4*a*).—A fine, large-flowered Narcissus of the Leedsii type, with spreading, waved, clear cream segments, the cup being moderately deep, spreading at the mouth, and of a deeper shade of cream. The foliage is of good appearance, and the stems strong and firm. Also shown by Mr. R. F. Calvert.

Narcissus Beauty of Cambridge (*Div.* 2*a*).—A showy variety of the bi-colour Incomparabilis group. The perianth segments are well-shaped, spreading and waved, and rich yellow in colour, the large cup being recurved, frilled at the margin and deep gold. Shown by Messrs. R. H. Bath, Ltd., Wisbech.

Narcissus Golden Goblet (*Div. XI.*).—A Narcissus of excellent shape, the segments of the perianth being slightly incurved at the margins and of a golden shade, while the trumpet, with a broadly reflexed margin, is of a deeper and richer tone. Also shown by Messrs. R. H. Bath, Ltd.

Narcissus Icilinda (*Div. 4a.*).—A showy Leedsii variety with short, bluntly-pointed segments, pale cream in colour, and a large, spreading cup, frilled at the margin and of a deeper shade of cream. Shown by Mr. W. F. M. Copeland, 156, St. James' Road, Southampton.

Narcissus Wide Wing (*Div.* 9).—A Poeticus Narcissus of fine texture, with broad, slightly reflexed, waved and crinkled, pure white segments, and a small, flattened and frilled cup that is rich yellow, with a vivid orange-red margin. Shown by Mr. F. A. Secrett, March Farm, Twickenham.

Narcissus J. K. Ramsbottom (*Div. 3b*).—A fine bi-colour Barrii variety, the segments of the perianth being large, spreading and pure white in colour, while the frilled and flattened cup is of flaming orange. Shown by Mr. F. A. Secrett.

Narcissus Holmdale (*Div. 4a.*).—A showy, creamy-white Narcissus with spreading segments and a rather slender trumpet that broadens at the mouth, the margin of which is frilled and reflexed. Shown by Messrs. Herbert Chapman, Ltd., Rye.

Groups.

Narcissi were quite a feature of this meeting, and the general tone of the exhibits was exceedingly high. Among the most striking groups was that staged by Messrs. Barr and Sons, which consisted of a huge bank, very tastefully arranged, of many representations of the various sections. Prominently placed were such varieties as Lord Kitchener, Red Gauntlet, Caedmon and Bernardino; Antiope looked extremely fine, as also did Alexus, Warwick, Red Cross, Fire Frill, Carmenta and Regan. A few other noteworthy varieties in this fine collection were Blazing Star, Red Emperor, Sarchedon, Bellona, Romagna and King Sol, while there were also a large number of beautiful seedlings.

A small collection of seedlings was arranged by Mr. W. F. M. Copeland, the most attractive of them being Indiana, the double, cream-coloured Irene Copeland, Gravenstein, Silver Rose, and Mrs. Percy Neale. The majority of the unnamed seedlings shown by Messrs. Herbert Chapman, were of a very high standard of quality. Of those that bore names the outstanding were Quartz, Fusillade, Water Lily, Rheingold and Rosary.

The fine group arranged by Messrs. F. A. Secrett consisted of pillars of Red Rim, Wide Wing, Heron and Ian Secrett, with a bank of other varieties as a background, well set off with Palms and Ferns. The blooms displayed in this exhibit were of exceedingly fine quality, among the most notable varieties being Naomi, Princess Miriam, J. K. Ramsbottom, Tolvan, Rachel and Everlasting. Also included in this group were some very showy seedlings, notably of the Leedsii and white-trumpet sections.

Next to this exhibit was another bank of Narcissus blooms staged by Messrs. D. Stewart and Sons. Here were to be seen fine bold pillars of Primrose Phoenix, Queen of the North, Croesus, Bernardino, Lord Kitchener, Horace, and the enormous Cornelia, while other varieties that were well shown included Empire, a giant white Leedsii; Dragoon, Firetail, Flame, and the showy Great Warley. There was also a box of N. triandrus calanthinus, and specimens of N. juncifolius, N. canaliculatus, and N. Bulbocodium conspicuus.

Messrs. R. H. Bath, Ltd., showed a really fine collection of Narcissi, well arranged and in exceptionally good condition; among those which made special appeal were Orange Glow, the enormous Advance Guard, The Don, Madonna and Macebearer, while other attractive features of this showy group were White Nile, Souvenir, Adoration, Theda, Golden Goblet, Sunrise and Nevis. Unfortunately, many of the finest blooms shown were unnamed seedlings, which displayed a wide range of colour and form.

The bank of colour arranged by Mr. J. L. Richardson was very striking, and the variety of Narcissi that it contained was even more so. With so large a selection it was very difficult to choose those of outstanding merit, but perhaps the most desirable were Beersheba, Galopin, Mityline, Seraglio, Therapia, and Master Robert, a fine large, yellow-trumpeted variety. There were also good blooms of Jubilant, Tenedos, Brightling and White Sentinel, but these represent a very small selection from the host of magnificent varieties that were shown.

Fruit and Vegetable Committee.

Present: Mr. J. Cheal (in the chair), Mr. W. H. Divers, Mr. E. Neal, Mr. J. Wilson, Mr. E. Beckett and Mr. A. N. Rawes, Secretary.

There was no business of any importance before this Committee.

READING GARDENERS.'

The last of the fortnightly meetings of this Association for the spring session was held on April 2, in the Abbey Hall, when the President, Mr. F. E. Hering, presided over a large attendance of members.

The lecture was of an advanced nature, yet it proved exceedingly interesting. The lecturer was Mr. A. O. Forder, M.S.R., Radiographer of the Royal Berkshire Hospital, and his subject was "X Rays and Violet Rays applied to Horticulture."

By the aid of a series of lantern slides he explained several experiments he had carried out by the use of the two rays, applied especially to Lily-of-the-Valley and Antirrhinums, and these proved very interesting. At the close of the lecture several questions were asked, and the thanks of the members were tendered to Mr. Forder for his unique and fascinating discourse.

The competitions for the evening resulted in Mr. J. Mills obtaining first prize for a bowl of Daffodils arranged for effect, the work being done in the hall, and also in the class for bowls of flowers and foliage arranged for effect.

In the non-competitive section an Award of Merit was gained by Mr. R. H . Goodchild for a floral design, and other exhibitors in this section were Mr. F. H. Peatten, who showed six dishes of Apples; Mr. H. Wade, with a display of Polyanthuses; and Mr. F. G. Rabbetts, who staged specimen Cyclamens.

KILMARNOCK BULB SHOW.

The sixth annual spring bulb show, organised by the Glenfield and Kennedy Horticultural Association, was held at Kilmarnock on March 30, and proved even more successful than its predecessors. The entries were more numerous than usual, and a higher quality of culture was shown in all the sections.

The John Craig Challenge Cup for Tulips was awarded to Mr. John Cochrane, and the Crawford Challenge Cup, awarded to the most successful competitor in the Daffodil section, was won by Mr. J. Cochrane. The Bruce Ball Cup, also for Tulips, was secured by Mr. C. Roxburgh; and the Ferguson Hyacinth Cup was awarded to Mr. J. Dodds. The latter secured nine first prizes in the ten Hyacinth classes. He was also placed first and secured a special award in the class for one pot of King Alfred Daffodils.

Another successful competitor, Mr. J. Currie, won eight first prizes in the Daffodil section with pot grown examples of Glory of Noordwyk, Sir Watkin, Lucifer, Barrii conspicuus, Albatross, White Lady and Ornatus. The Smith prizes, for the best twelve blooms of long-trumpet Daffodils, were won by Messrs. W. Winning, J. Dodds and H. Train.

An attractive feature of the show was a collection of thirty varieties of Daffodils staged by Mr. H. Smith, that included several specimens of the newer white-trumpet varieties.

Amongst the non-competitive exhibits there were bulbous plants staged by Mr. Crawford, and Cyclamen, Hydrangeas and Hyacinths from the Springside Nursery.

INSTOW SPRING FLOWER SHOW.

This noteworthy event was held on March 21, and proved so great a success as ever. The first show was held in 1922, and despite the fact that there is neither judging nor the awarding of prizes, nor are entrance fees for exhibiting demanded, it has annually proved a popular event, and the quality of the exhibits is always of a high standard.

The early date and the unprecedented cold weather of the previous week acted very disadvantageously on all cut blooms grown out-of-doors. Daffodils were in all cases confined to blooms of first and second earlies. The Rev. T. Buncombe had practically none in bloom and every exhibitor had less than usual, whilst the coloured Primroses and other spring flowers were much fewer than normally. On the other hand, the greenhouse exhibits were exceptionally good, as also were the forced Daffodils.

The premier collection of Narcissi was undoubtedly that from Mr. R. Seymour Cobley, consisting of twenty-seven varieties, including a gorgeous bunch of Fortune and many almost equally fine and uncommon seedlings, such as Magnolia, Lanarth, Robespierre, Amber, Godolphin, Tunis and Grey Steel.

Miss Hinchliff staged a fine collection of Daffodils that included a good many old-fashioned early sorts. The gem of this collection was Beersheba, but there were also blooms of Goldbeater, Pedro, Santa Maria, albicans, Peter Barr, Florence, Eve and Elinor.

A fine group, staged by Mrs. Dodd, attracted considerable attention; while Mrs. Hinchliff's exhibit of about twenty-four varieties included some fine blooms of C. T. Backhouse, as well as Lucifer and Mermaid.

Excellent Carnations were shown by Mrs. Hinchliff, while the group of indoor plants arranged by Miss Hinchliff include Richardias, Cinerarias in shades of blue and brick-red, and Primula kewensis. Mrs. Lane showed Geraniums and Primula obconica; and Mrs. Critchley showed Schizanthus and Primula malacoides.

Amongst other cut flowers included in the smaller exhibits we noticed Anemone florentina, A. Pulsatilla and A. coronaria; Hyacinths, Grape Hyacinths, Tulipa florentina, Iris tuberosa and I. bucharica; while among flowering shrubs there were two forms of Skimmia, Cytisuses, Kerria japonica, Veronicas, Ribes sanguinea, Berberis Darwinii and Viburnum Tinus.

PAISLEY FLORISTS'.

The one-hundred-and-forty-sixth annual spring show of this old-established Society was held recently, when the number of entries exceeded all previous records, necessitating the restriction of trade exhibits to make room for the competitive classes. The quality of the exhibits, particularly in the Daffodil section, was exceptionally high, while greenhouse plants were also well represented.

An outstanding feature in the competitive section was the remarkable success of Mr. D. Graham, who secured twenty-six prizes out of twenty-seven entries. He also won the special prize for the best exhibit in the bulb classes with well-grown examples of Ellen Terry and Van Waveren's Giant Daffodils, and the special prize for the best exhibit in the competitive classes with a well-furnished plant of Azalea indica.

Mr. H. Frazer was also prominent in the prize-list with nine first awards to his credit.

The Corporation Parks Department staged a beautiful display consisting of Cinerarias of the large, blue-flowered form, Primula malacoides, Tulips, Daffodils and Hyacinths, tastefully arranged in broad groups under a canopy of Palms.

Mr. J. Holmes staged a choice collection of Ericas, and Mr. J. Davidson, gardener to Sir John Reid, exhibited an interesting group of Daffodils.

Mr. J. Martin displayed a comprehensive exhibit of alpine plants, numbering one-hundred-and-fifty, consisting of Saxifrages, Dianthuses, Primulas, Veronicas, etc. Other trade exhibits consisted of Azaleas, Tulips and Primulas by

Mr. J. Laidler, and Cyclamen, Spiraeas, Azaleas, Primulas, Tulips and Daffodils, by Mr. J. McFee.

Provost Crawford, who formally opened the exhibition, complimented the Society on its long and successful record and the enterprise shown by the Directors.

SALISBURY GARDENERS'.

The final meeting for the winter session, of this Society, was held on March 28, when Mr. C. G. Wyatt presided over a large attendance.

Mr. E. G. Townsend, of Chard, gave an interesting lecture on Dahlias, tracing their history and development since the original introduction to Europe in 1615, drawing special attention to the fact that during the last ten years extraordinary improvements had been made, and suggesting that the Dahlia was now fast becoming a rival to the Rose. He gave a simple outline of cultural needs, and a few hints on keeping the plants free from insect attacks. The discussion that followed was of a very high standard, and some important facts were established.

A hearty vote of thanks was accorded the lecturer, and Mr. Townsend, in acknowledging the thanks, referred to the interest his subject had aroused, and the great amount of knowledge he himself had gathered. He proposed a vote of thanks to the Chairman for presiding, remarking, incidentally, that he was very proud of the opportunity, as a young man amongst Dahlia enthusiasts, to have the honour of addressing a meeting where one of the pioneers amongst Dahlia specialists was the Chairman.

There was a bright exhibit of Azaleas from Mr. W. F. Gullick, amongst them being some specimens of the varieties for which he received Awards of Merit at the R.H.S. meeting on the previous day.

An interesting note was received from the Town Clerk, with reference to the Wild Flower Exhibit at the Public Library, stating that the public authorities of Bradford, Yorkshire, were anxious to receive particulars of the Salisbury Society's scheme.

CARDIFF GARDENERS'.

The annual general meeting of this Association was held on March 27 at The Queen's Hotel, Cardiff, the chair being occupied by Mr. W. Bennett.

The meeting, which was well attended, included a deputation from the Cardiff Horticultural Society, whose object was to invite support from the Cardiff gardeners, as their annual flower show had passed through a varied career during the past few seasons, and it had been decided to hold this year's show during July, in Roath Park, instead of during September in the Drill Hall, Dumfries Place, Cardiff.

After the deputation had stated their views, discussion took place, and it was decided that more support should be given in the future than had been in the past; all members were invited to join at the nominal fee of five shillings.

After the minutes of the last general meeting had been read, and the statement of accounts passed, Mr. W. Bennett was invited to act as Chairman during the coming session, and Mr. Price as Vice-Chairman.

A vote of thanks was tendered to the Secretary, Mr. E. F. Coward, for the able manner in which he had carried out his duties during the past session.

Alan Gibbs, Esq., was awarded a Certificate of Merit for a display of Chrysanthemums staged in the autumn, and Mr. W. Rockney secured the first prize for an ideal collection of alpine plants. The prizes were presented by Alan Gibbs, Esq. Mr. W. E. Wright won the prize given by the Chairman for the introduction of the greatest number of new members.

It was decided to visit the Cardiff Castle gardens to inspect the spring flowers during April, and to pay a visit to Cheltenham during the summer for the annual outing.

Obituary.

John Grant.—We regret to announce the death at his residence, Hill Cottage, Bishopmill, Morayshire, of Mr. John Grant, retired gardener, who had reached the venerable age of eighty-five years. The son of a miller, deceased started with his father intending to follow that calling, but the confined nature of the work seriously impaired his health, and he decided to adopt gardening as a profession. How sensibly he chose is borne out by his fine span of life. Mr. Grant was for over twenty years gardener to the late Mrs. Robert Young, of Millbank, Elgin, subsequently being employed by that lady's son, Mr. W. C. Young. After several years spent in the service of Mr. Young he was appointed gardener to Mr. George A. Maclean, Hytherhill, near Elgin, where he remained until advancing years compelled retirement. A conscientious and capable workman, the gardens under Mr. Grant's care were a model to his professional friends. He took a prominent part in public affairs, and was for many years a valued member of Spynie Parish Council. The poor never had a truer friend, and many a lift up he gave to those unfortunate in life. The funeral, at Spynie Churchyard, was very largely attended, a tribute to the respect and esteem in which Mr. Grant was held. Mrs. Grant died ten years ago, and six sons and six daughters, many of whom are scattered over the world, are left to mourn the loss of a fine personality.

Walter Siehe.—The death occurred on March 10 at Adana, in Turkey, of the well-known botanist and plant collector, Walter Siehe. His death will be regretted by plant lovers in every country, not only from a sense of the loss of a friend, but also because his knowledge of the flora of Asia Minor was probably unique, and botanic gardens in especial had learned to appreciate his services at their full value. He visited Germany for a short while two years ago.

ANSWERS TO CORRESPONDENTS.

Camellia reticulata on Chalk.—*Constant Reader.* The appearance of the leaves of the Camellia shoots you sent us indicate either a nutritional disturbance some distance below where the shoots were cut, or that there is something abnormal at the roots. If there is no die-back or canker anywhere on the plants, they are probably suffering from chlorosis, a disease caused by an excess of lime in the soil; this may be remedied by the addition of sulphate of iron. An excess of lime or the absence of potash in the soil, would cause the foliage to change colour as in the specimens submitted. We would suggest the following treatment. Spray the whole plants, on dull days, with a dilute solution of iron sulphate (one ounce to six gallons of water), and then fork in lightly around the plants two ounces of finely powdered iron sulphate per yard. If this treatment has no effect, we would suggest lifting the plants carefully during dull, moist weather and replanting them in soil that has been enriched with a good quantity of humus, for Camellias require a peaty or loamy soil that is rich in such material.

Conifers Diseased.—*W. M. C.* The plants received were not Sitka Spruce, but Douglas Fir. They have been killed by the fungus Armillaria mellea, a species that is very prevalent on the dead roots of trees, from which it spreads to the living roots of young trees, killing large numbers in some places. Old Oak and Beech plantations that have been cut over are very subject to the disease. As a rule, Douglas Fir is less liable to attack than Pine and Spruce. Young broad-leaved trees are not so likely to suffer as Conifers, although the disease is so common on the dead roots of old Beech and Oak stumps.

Disease Attacking Goldfish.—*H. G. C.* Judging from the description you give, the goldfish have been attacked by the salmon disease (Saprolegnia ferax) which proves very destructive to salmon, when once it breaks out. The symptoms are just the same as in the salmon disease. The fluffy matter round the eyes is the fruiting portions of the fungus, and it makes salmon so uncomfortable that they may dash their heads against gravel or stones in their efforts to get rid of the parasite. Myriads of spores are produced, which break up in their cells into smaller bodies called zoospores, which are capable of movement through the water by means of two very slender filaments. The presence of diseased fish in a pond is a source of real danger, and it would be policy to net and remove all fishes that are seen to be diseased, because it is extremely doubtful if a diseased fish could be cured of this trouble. With the object of disinfecting the water, that is, of killing the motile zoospores, we would suggest the use of copper sulphate. Multiply the length by the width, and the depth of the pond to ascertain the number of cubic feet of water present. This sum should be multiplied by 6¼, which is the number of gallons of water in a cubic foot, and the product will be the number of gallons in the pond. The width of the pond was not mentioned in your letter of enquiry, so we could not calculate the cubic feet of water in it. One pound of copper sulphate is sufficient for 100,000 gallons of water, and one ounce for 6,250 gallons. The copper sulphate should be powdered, put in a thin muslin bag, and trailed across the whole pond at intervals until the sulphate is dissolved, and has passed into the water. The above strength neither will injure Water Lilies nor goldfish.

Gardener's Notice.—*C. H. G.* Subject to any local custom and to any special terms of engagement, as a head gardener you are entitled to one month's notice.

Hyacinth Bulbs Failing.—*J. P.* The Hyacinth bulbs are infested with eelworms, mites, bacteria and Fusarium in abundance, but it is impossible to state which of these was the original cause of the trouble, for the bulbs were so badly decayed. They should be burned without delay.

Names of Plants.—*W. H. E.* 1, Eupatorium Raffillii; 2, Begonia President Carnot; 3, Isoloma hirsutum; 4, Euphorbia fulgens (syn. E. jacquiniaeflora); 5, probably Kalanchoe species, but cannot identify without flowers.—*L. B. S.* Sprekelia formosissima. *J. S.* Sequoia gigantea.—*S. W.* 1, Arbutus Unedo; 2, Acacia armata; 3, Primula rosea.

Iris Wattii.—*A. G.* By Iris Wyattii, we assume you mean Iris Wattii, which was raised by the late W. R. Dykes from seeds received from Père Ducloux, who collected them in south-western China (see *The Gardeners' Chronicle*, Feb. 20, 1915, p. 95). It is doubtful if this is the correct name of this Iris, as the true I. Wattii is a native of Manipur, India, and is certainly a different plant from the Chinese one, which seems to be a form of I. japonica, differing only in its taller habit and smaller flowers. The correct name and position of this Iris is, however, at present under consideration. I. fimbriata is a synonym of I. japonica. You might try Mr. Amos Perry, Hardy Plant Farm, Enfield, or Messrs. R. Wallace and Co., The Old Gardens, Tunbridge Wells.

Tulip Bulbs for Examination.—*W. J. B.* The Tulips are attacked by the disease known as Penicillium and not by Botrytis, which is presumably the Dutch disease you mention.

Tulips Failing.—*W. E. P.* Your Tulips are not attacked by insects, but Penicillium was present in the specimens sent. We know of no cure for this trouble.

Communications Received.—F. S., (Thanks for 1/- for R.G.O.F. Box).—M. J. W.—S. B.—E. B.—F. C. D.—H. S.—W. A.—M. W.—J. P.—A. T. J.—H. C. T.

THE Gardeners' Chronicle

No. 2156.—*SATURDAY, APRIL* 21, 1928.

CONTENTS.

Alpine garden—
  Chrysanthemum arcticum 278
  Parochetus communis 278
  Viola rupestris ... 278
Apple scab 285
Bacteria and soil inoculation 284
Begonia Gloire de Lorraine as a cut flower 284
Cultural memoranda—
  Large-flowered Gladioli 284
  Sowing annuals ... 284
De Cock, M. Lucien ... 274
Dutch Elm disease in England 273
Empire agriculture and horticulture ... 273
Escallonia Edinburgh 283
Farm wages 275
Foreign correspondence 286
Frank Reader Testimonial 273
Fruit garden, the market 285
Garden accidents ... 284
" Gardeners' Chronicle" seventy-five years ago 275
Harding prize for a French Rose ... 275
Hardy flower border—
  Perennial Lobelias... 282
Lilium tigrinum, the sterility of 280
Lime or chalk... ... 284
National Dahlia Society 275
Obituary—
  Proctor, J. 288
Potato experiments ... 283
Primula, the genus ... 282
Primulas, woodland ... 278
Pyrus Malus Russell's Weeper, award to ... 288
Rhubarb, forced ... 284
Societies—
  Lincolnshire Daffodil 288
  London Daffodil ... 286
  United Horticultural Provident and Benefit 288
Trees and shrubs—
  Blue Conifers ... 279
Trespassers and the law 281
Vegetable garden—
  Water-cress... ... 286
Vinca rosea, medicinal value of 275
Violas, a revision of... 282
Week's work, the ... 276
Wistaria, a giant ... 274

ILLUSTRATIONS.

De Cock, M. Lucien, portrait of 274
Lilium tigrinum 280, 281
Narcissus J. K. Ramsbottom, 275 ; N. Clwyd 283
Odontioda Rubicon 277
Pyrus Malus, Russell's Weeper 279

SUPPLEMENT PLATE.

Daffodils at Knollwood, New York.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 48.7°

ACTUAL TEMPERATURE.—

The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London, Wednesday, April 18, 10 a.m. Bar. 31.0. Temp. 43°. Weather, Fine.

Empire Agriculture and Horticulture. THE meeting of the Imperial Agricultural Research Conference held in London in 1927 marks an epoch in the history of organised agricultural and horticultural research of the Empire. The numerous and representative attendance at the Conference is sufficient proof that the various Dominions and other members of the Empire are alive to the importance of united action in securing the highest measure of efficiency for the fundamental services of agriculture and horticulture. Anyone who scans the *Report** of the Conference will realise the extraordinary variety of agricultural and horticultural production within the Empire, and the need for a much larger measure of investigation if the agricultural and horticultural potentialities of the Empire, are to be realised. It is, we believe, the intention to hold another Conference some few years hence in Australia and presumably, as time goes on, the headquarters of this important institution will make procession throughout those lands which acknowledge our flag. It seems to us, however, that before the next meeting takes place, the valuable *Report* of the Conference should be scrutinised very thoroughly by a competent body in order to make certain that the recommendations of the 1927 Conference are sufficiently comprehensive. For our part we are certain that, in one respect, at all events, they are not. We refer, naturally, to the horticultural aspect of Empire production, and would point out that no one who is familiar with the horticultural production and possibilities of different parts of the Empire would regard the recommendations under the headings " Fruit " and " Proposed Imperial Horticultural Committee," which together take up some six pages of the *Report*, as constituting a really serious effort to survey the requirements and possibilities of Empire horticulture. For such a survey to be made it would be necessary to have some sort of stocktaking of the present varied production of fruits and other horticultural produce within the Empire, and such a survey would include not only temperate but tropical and sub-tropical fruits. No one will dispute, for instance, that the Empire can grow, and probably grow economically, a far larger quantity of Oranges, Bananas, Dates and "Palm-oil" seeds than it is at present producing. The same is true of many other tropical, sub-tropical and temperate fruits. Anyone who has experience of horticulture knows that at the present time far too little importance is given at research stations to the study of fundamental problems which underlie horticultural production. Whilst, on the one hand, close attention is given, it may be quite properly, to the study of pests, too little is given to the fundamental studies of soils suitable to the production of healthy fruits and methods of cultivation, which in themselves ensure in large measure freedom from diseases. We hope, for our part, that before the next Conference a serious effort will be made to review what we may call the " six-page programme," to survey the possibilities of horticultural production within the Empire, and to prepare a memorandum which, if adopted, shall ensure for horticulture a position in the next Conference which its importance deserves. We have never concealed our view that when horticulture is lumped together with agriculture it must inevitably run the risk of being overlaid—smothered by the vast bulk of its great ally. It should, therefore, receive a certain measure of independence, and were this the case, it would be able to look after its own interests more effectively, and at the same time would be a valuable ally to its larger partner, agriculture. The Olive and the Vine, the Orange and the Grape Fruit, as well as all fruits of temperate regions; not to speak of all those other horticultural plants which grow within the Empire; are of sufficient importance to require the formation of a Horticultural Department in the next Imperial Agricultural Research Conference, possessing a certain amount of freedom of action, but, at the same time joined closely to the Agricultural Conference itself. By the nature of the case, horticulture must always be more advanced than agriculture; its problems are fewer and simpler, the cultivation which it can afford is more intensive, the genetical problems which confront it, applying as they often do to trees, are of a different order than those which confront agriculture. It should be free to develop at its own rate and not be obliged to set its pace to that which the vastly larger, more cumbrous and inevitably less advanced agriculture must fain use.

Our Supplement Plate.—At this season of the year the interest of the flower-loving community at large is centred on Narcissi, the beauty of which is appreciated both in their wild state and the various uses to which they are put in gardens, but it is when naturalised in woodlands, and grassy glades that they make special appeal. This interest is not confined to the British Isles, nor to Europe, as will be seen from our Supplement Plate, which depicts one of several beautiful effects that have been obtained by Mr. J. Goatley (who was previously Gardener to the late Lord Northcliffe, at Sutton Place, Guildford), in the grounds of Knollwood Farm, Port Chester, New York, the beautiful residence of Mr. Price.

Frank Reader Testimonial.—The amount subscribed to the testimonial to Mr. Frank Reader—who was for many years the courteous cashier of the Royal Horticultural Society, and retired at the end of last year—came to £293 3s. 6d.; the expenses of printing, postages and the morocco-bound book containing the subscribers' names amounted to £23 2s. 9d., leaving a balance of £270 0s. 9d. It was the intention of the Testimonial Committee to entertain Mr. Reader to dinner and make the presentation on that occasion, but, unfortunately, Mr. Reader is so ill that such a function has become impossible, consequently the presentation was made privately at his home at Croydon on the afternoon of Wednesday, April 11. Mr. Cuthbertson, V.M.H., expressed very happily the high esteem in which Mr. Reader is held, and the pleasure it had afforded his many friends to join in this evidence of their deep regard. Mr. G. Monro, C.B.E., then handed Mr. Reader the cheque for £270 0s. 9d., endorsed Mr. Cuthbertson's observations, and said that all Mr. Reader's friends sincerely hoped he would soon recover from his severe indisposition. Mr. C. H. Curtis, one of Mr. Reader's oldest friends, presented the book containing the names of the subscribers, and emphasised the great pleasure with which all concerned had taken part in arranging the testimonial. Mr. Reader received the presentation with great pleasure and deep emotion, and asked that his gratitude to the Committee and subscribers should be made known through the medium of the horticultural press.

Dutch Elm Disease in England.—In our issue of January 8 (pp. 31 and 32), Dr. Malcolm Wilson gave an illustrated account of the appearance of Dutch Elm Disease in England, and at the meeting of the Linnean Society, held on March 29, together with Miss M. J. F. Wilson, he read a paper on the same subject, illustrated by lantern slides. He stated that the Dutch Elm disease was discovered in Holland in 1919, and during the same year in the north of France. The following year it was reported from all parts of Holland, and in 1921 was stated to be present throughout Belgium. In the same year it was recorded from western Germany, and since that date has spread over the greater part of that country. It has recently been recorded from Norway, but the report has not been confirmed, and it does not appear to be present in Denmark or Sweden; according to verbal statements it is present in Spain and Italy. An outbreak of the disease was discovered near London last July. Three explanations have been offered as the cause of the epidemic:—(1) It is due to the fungus Graphium Ulmi, Schwarz; (2) It is caused by Micrococcus Ulmi, Brussoff; and (3) It is the result of unfavourable climatic conditions, *i.e.*, drought and frost. The most recent experimental evidence, published by Wollenweber, supports the first explanation, and this is generally accepted by the Dutch investigators. Brussoff considers that the disease also attacks other species of trees, but this has not been confirmed by other workers. Trees suffering from the disease may be readily recognised by the yellow discoloration of the leaves in the crown of the tree or at the tips of the side branches. This condition usually spreads rapidly over the tree, and is followed by leaf-fall and, subsequently, by the death of the tree. Defoliation may be complete within a week, but sometimes extends over a much longer period. Infected branches, when cut across, show one or more rings of small, brown spots in the most recently-formed wood. These internal symptoms sometimes, but not invariably, can be found in the roots. Culture work has been carried out with material obtained from Germany, Holland and Britain, and the results show marked similarity. Graphium Ulmi was isolated in a large proportion of the cultures; in addition, bacteria, mainly cocci, were found in most of the liquid but not on the solid media. The disease is present in epidemic form throughout most of western Europe, and shows no sign of becoming less virulent. No species of Ulmus grown in Holland appears to be immune, and the situation is so serious that the Dutch authorities have now discontinued the planting of Elms. No adequate method of control has yet been discovered, but removal and destruction of trees in the early stage of infection may check the spread of the disease. Dr. G. H. Pethybridge considered that the most important new point emerging from Dr. Wilson's interesting discourse was the fact, announced for the first time, that the coremial fructifying stage of the fungus Graphium Ulmi—now considered to be the real cause of the disease—had been found to occur on dead twigs of the host. They were now therefore no longer completely in the dark as to the source from which infection of healthy trees might occur. It was equally important to discover the mode and time of infection, for with such knowledge it would be more easy than it was at present to formulate control measures on an intelligent basis. He understood that the Forestry Commission had decided to undertake a survey in regard to the disease so soon as the time arrived when symptoms would again become visible, and he alluded to some of the difficulties that might be encountered in securing and diagnosing suitable material. With regard to the Order, promulgated in 1926 by the Ministry of Agriculture, prohibiting the importation of living Elm trees from the continent of Europe into England and Wales, to which allusion had been made, and which Dr. Wilson regarded as having been made too late, Dr. Pethybridge pointed out that the powers under the Destructive Insects and Pests Acts in regard to forest tree diseases and pests, formerly exercised by the Ministry, were assumed by the Forestry Commission when this body came into existence in 1919. Although this Commission did not exercise its own powers in this instance, it appealed to the Ministry to make the Order, and the request was promptly complied with. The Order thus came into force at least a year-and-a-half before any case of the disease was observed in England. Dr. Wilson's and Miss Wilson's continued investigations on behalf of the Forestry Commission would undoubtedly be of great service to that body in its endeavour to exterminate the disease, or at least restrict its spread.

**Report and Summary of Proceedings of the Imperial Agricultural Research Conference*, 1927. Published by H.M. Stationery Office, Adastral House, Kingsway, London, W.C.2. Price 1s.

Legacy to a Gardener.—The late Mr. G. W. Bird, of The Manor House, West Wickham, who died on December 5, bequeathed £100 to his gardener, Mr. Herbert Redden.

Land Development in America.—An Act has recently been passed by the United States of America Congress authorising the establishment of an experimental station at, or near, Cheyenne, Wyoming, to ascertain which plants are best adapted for culture within the semi-arid or dry-land regions of the United States, and to distribute free of charge, but under such regulations as may be considered necessary by the Secretary of Agriculture, plants, seeds or cuttings of the subjects suitable. A large sum of money has been allotted to the Ministry of Agriculture for this purpose.

Retirement of Horticultural Superintendent.—On April 12, Mr. W. Goaring completed his duties as Horticultural Superintendent under the East Sussex County Agricultural Committee. Mr. Goaring commenced his official career in 1891, in which year he was appointed County Instructor in horticulture under the Hants County Council. In the following year he accepted a similar post for West Sussex, and later he was employed jointly by both the East and West Sussex Councils; in 1903 the East Sussex County Council claimed his full-time service. Mr. Goaring was intimately associated with the Uckfield Agricultural and Horticultural College, and the well-known Uckfield Fruit Gardens were designed and laid-out by him. He was one of the pioneers of the Horticultural Education Association, and his work in connection with the advancement of horticulture in all its branches in the county of Sussex, and especially in connection with the market- and fruit-growing sides of the profession, has been far-reaching in its effects. Mr. Goaring has retired from official work accompanied by the good wishes of all who are interested in the advancement of horticulture.

M. Lucien de Cock.—Few men are better-known in horticultural circles in Belgium than M. Lucien de Cock. Formerly a nurseryman, M. de Cock now devotes his time to administrative work. He is a judge of the Tribunal de Commerce and Administrator of Industrial Societies. He was born in April, 1878 and at the early age of twenty became a member of the General Council of the Société Royale d'Agriculture et de Botanique de Gand; on the proposal of the late Comte Oswald de Kerchove—then President—M. de Cock was nominated assistant to the Secretary of the Society for the Floralies Gantoises of 1898, became Administrator of the Society in 1900, and General Secretary in 1910, consequently he has organised the great Ghent Shows over a period of thirty years. M. de Cock is a man of untiring energy, fine presence and striking personality, urbane and courteous—a born administrator. He has worked hard on behalf of Belgian horticulture and has received many honours during his career, notably those of Chevalier of the Order of the Crown of Belgium, Officer of the Order of Orange and Nassau, and Officer of the Merité Agricole of France. He is also an honorary member of the French National Horticultural Society and of the Piedmont Horticultural Society and a corresponding member of our own Royal Horticultural Society. M. de Cock has rendered every possible assistance to the members of the British Section of this year's Ghent show, and thereby earned their deepest gratitude.

M LUCIEN DE COCK.

Appointment from Kew.—The Secretary of State for the Colonies has appointed Mr. J. C. Nauen, a student gardener at the Royal Botanic Gardens, Kew, to the new post of Horticulturist in the Agricultural Department, Bermuda.

Americans' Search for Grasses.—The two plant explorers of the United States Department of Agriculture, Mr. L. W. Kephart and Mr. R. L. Piemeisel, have recently returned from Africa with over one-hundred and sixty samples of seeds of different grasses, and four hundred specimens of other plant life. The object of this expedition, which occupied nine months, was to secure seeds of grasses that would be of use to lengthen the season of green pastures and meadows, both in North and South America, and experiments will now be conducted at the research stations with the material obtained, to ascertain their value in this respect. The two explorers, in seeking for grasses, tramped more than three hundred miles through the highlands of Kenya and Tanganyika, and their collection is estimated at about seventy-five per cent. of the forage grasses in that region. They also made extensive observations of the natural vegetation of the area in an attempt to determine the potential value of the soil and the possible place the region may ultimately hold in the economic agriculture of the world.

Cross Park, Glasgow.—The latest addition to Glasgow's open spaces was opened to the public last week. Situated in the Partick division of the city, the site, which extends to three-and-a-half acres, was acquired by that burgh before it was annexed to Glasgow. The grounds have been tastefully laid out with parterres occupying advantageous positions, and ten shelters are provided. The work of construction occupied two years.

R.H.S. and the Ghent Show.—We understand that the Council of the Royal Horticultural Society has appointed Sir William Lawrence, Bart., Mr. George Monro, C.B.E., and Mr. W. Oldham, to represent the Society at the Ghent Quinquennial Exhibition.

A Giant Wistaria.—We learn through an American contemporary of an enormous specimen Chinese Wistaria, growing in Sierra Madre, California, that is said to cover an area of almost three acres. It is stated that this enormous vine was planted thirty-five years ago, and that every year, at blossoming time, the community of Sierra Madre, numbering about five thousand, holds a Wistaria Fête under its branches. These fêtes attract large numbers of visitors, and it is recorded that as many as fifty-thousand people have visited the Fennel Gardens, in which it is growing, in one season while it is in bloom. Mrs. Fennel, the owner of the Wistaria, gives an interesting account of the development of the specimen, and describes how, after encircling the house, the branches were allowed, with a little assistance, to circulate through the surrounding trees. It is stated that this Wistaria is never pruned in any way, and still maintains the deep violet colouring of its blooms.

Belgian Chrysanthemum Society.—The Société Belge des Chrysanthemistés has conferred honorary membership upon Mr. Charles H. Curtis. The Secretary of the Society is M. F. Rockens, and the Foreign Secretary M. L. Gentil; both are of the Botanic Gardens, Brussels, and old Kewites.

The Fenland Flower Industry.—A record quantity of Easter blooms was sent to market from the London and North Eastern Railway station at Spalding, which is the centre of the Fenland flower industry. On Good Friday, sixty-eight tons were dispatched, and the total weight for the week aggregated 220 tons, or thirty tons more than for the corresponding period of last year. Not for a number of years have so many flowers been dispatched from Spalding at Easter. Of the forty-nine railway van loads which were sent to the principal centres on Good Friday, eighteen went to London, seven to Manchester, Liverpool and Sheffield, five to Newcastle and Edinburgh, and four to West Riding. In addition, there were large consignments of flowers from other stations in the Spalding, Holbeach and Sutton districts.

School Bulb Competition.—An interesting school bulb-growing competition, organised by Miss A. K. Lock, Hon. Secretary of the Camberwell Gardens Guild, has recently been decided. Bulbs of Daffodils were supplied to twelve children from each school in the district, and the best "team" were awarded the Challenge Shield presented by Mr. E. T. Campbell, M.P. Twenty-five schools were represented, and the successful twelve were girls from the Oliver Goldsmith's School; the boys from this school won the summer plant-growing competition last year. A similar competition for mothers attending the Infant Welfare Centres in the district has also been decided, the Kempshead Hall Centre being the winners of the shield presented by Mr. E. E. Rashleigh, of Waltham Cross.

Dutch Nursery Firm's Anniversary.—The celebrated Dutch nursery firm of Moerheim, at Dedemsvaart, has just celebrated its fortieth year of existence. Founded by Heer B. Ruys, in 1888, as a small market garden, it soon expanded to include fruits and ornamantal plants and flowers, and with the extended popularity of hardy flowers it grew and prospered. In 1925, Heer Ruys took into the business his son, Dr. J. D. Ruys, who now shares with his father the heavy responsibilities of this large and flourishing concern.

Medicinal Value of Vinca rosea.—The value of this plant as a remedy for diabetes has been known in Africa and Australia for some considerable time, and its use in a crude manner—as a decoction of twenty-seven leaves in three teacupfuls of water, taken after meals three times a day—is quite a common practice. Chemical examination has proved that it contains at least three alkaloids, which were present in nearly the same proportions in all the specimens that have been examined, and operations are now being conducted on a fairly large scale to ascertain the actual remedial value of this plant.

National Dahlia Society.—The schedule of Prizes offered by the National Dahlia Society, for award at the Annual Floral Meeting, to be held on September 12, at the Horticultural Hall, Westminster, has been issued. Points of interest contained in the schedule are that in some of the amateur classes the prizes are increased in value, and in others the number of blooms required is reduced; and there are new classes for table decorations and for vases and bowls. To encourage the use of the Dahlia as a cut flower for florists' work, Mr. George Monro, of Covent Garden, offers a Challenge Cup for the best twelve vases of distinct varieties suitable for market purposes. The schedule, which contains full particulars of all matters relating to the show, may be obtained post free from the Hon. Secretary, Mr. W. J. Chittenden, 2, Dents Road, Wandsworth Common, S.W.11.

Retirement of Darmstadt Botanist.—Horticulturists in this country will be interested to learn of the retirement, on April 1, of Herrn. J. A. Purpus, Curator of the Darmstadt Botanic Garden. In 1926 he was able to celebrate his fifty-years' jubilee of horticultural work, and it is nearly twenty-nine years since he was first appointed to a position in the Botanic Garden from which he has only just retired. His profound knowledge, both practical and theoretical, brought him world-wide honour, and raised the status of the Darmstadt Garden to a high level. He will take with him in his well-earned retirement the cordial good wishes of horticulturists of every land.

Farm Wages.—The third annual *Report* of proceedings under the Agricultural Wages Act, which has now been issued, surveys briefly the work of the Agricultural Wages Board and the Agricultural Wages Committees in England and Wales during the twelve months ended September 30, 1927. It also records the action taken by the Ministry to secure the observance of the minimum rates, and the action taken by Agricultural Wages Committees in dealing with applications for permits to exempt infirm and disabled workers from the operation of the minimum wage provisions. The *Report* also discusses the state of employment and the demand for labour in agriculture, and one of its sections deals with the results of an enquiry into the conditions of employment of women workers in agriculture. The minimum rates of wages fixed by the Wage Authorities are given in the appendices. Copies of the *Report* are obtainable from H.M. Stationery Office, Adastral House, Kingsway, or through any bookseller, price 1s. 6d. net.

The Rhododendron Association.—The first annual general meeting of this Association will be held in the Council Room of the Royal Horticultural Hall, Vincent Square, Westminster, on Tuesday, May 1, at 4.30 p.m.

Harding Prize for a French Rose.—Mrs. Edward Harding is offering a prize of Fs.2,500 for a new Hybrid Tea Rose raised in France. The prize-winning Rose must not have been placed in commerce, and it must be yellow in colour, double-flowered, of good form and vigorous growth, and possess long stems. In the case of two Roses of equal merit being presented, the prize may be divided.

Appointments for the Ensuing Week.—Tuesday, April 24: Royal Horticultural Society's Committees meet (two days); National Auricula and Primula Society's Show (two days); Cornwall Spring Flower Show (two days); Royal West Renfrewshire Horticultural Society's meeting. Wednesday, April 25: Midland Daffodil Society's Show (two days). Thursday, April 26: British Carnation Society's Show (two days); Paisley Florists' Society's meeting; Bideford Horticultural Society's meeting. Friday, April 27: Manchester and North of England Orchid Society's meeting.

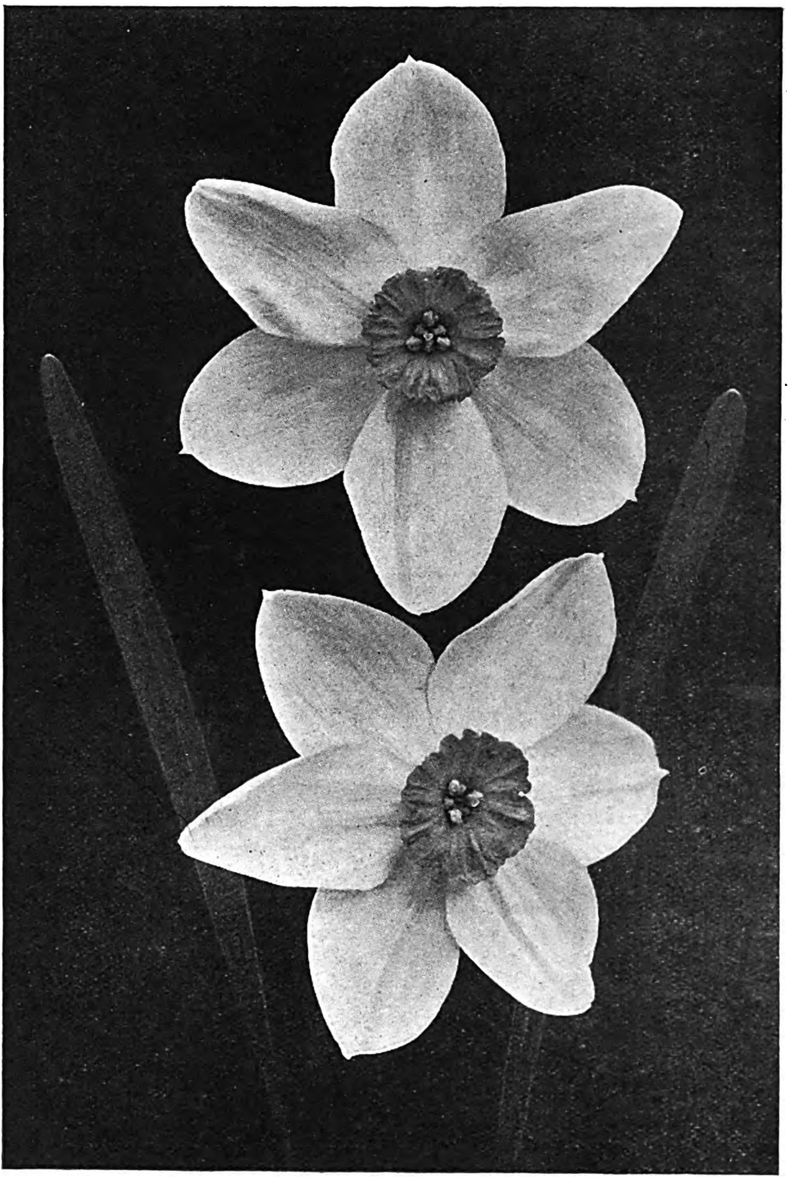

FIG. 134.—NARCISSUS J. K. RAMSBOTTOM.

R.H.S. Award of Merit, April 11. Perianth white; cup orange. Shown by Mr. F. A. Secrett.

(see p. 271.)

"Gardeners' Chronicle" Seventy-five Years Ago.—*Packets of Seeds.*—Mr. Cole has accounted for a certain agent appearing to sell his Celery seed at 1s. the packet, whilst he charges 2s. 6d. Now, I can assure Mr. Cole that many dealers in the article could sell packets of the genuine seed at the above-mentioned price and obtain a good profit by it. The word packet is of a very slippery meaning, and indescribably useful to certain cunning vendors of seeds. They understand the rule of division, and applying it to Mr. Cole's packets, he will get the discredit of the half-thimbleful of seed sold for 2s. 6d. Of what use is this word packet in a dealer's list, but to allow him to have the advantage over his customer of securing the sum to be paid, and giving no security in return for the value of the article sold? Let Mr. Cole and all respectable dealers in seeds discard this juggling word and sell by the ounce, or, if that is too much, by the dram avoirdupois. *L. Stephenson, Souldern, Oxon. Gard. Chron., April* 16, 1853.

Publications Received.—*Studies in the Ecological Evolution of the Angrosperms*, by J. W. Bews. *New Phytologist* Reprint No. 16. Wheldon and Wesley, Ltd., 2, Arthur Street, W.C.2.—*The Improvement of Pastures and Meadows.* Obtainable gratis and post free on application to the Chilean Nitrate Committee, Friars House, New Broad Street, E.C.2.

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven Moore, Manchester.

Catasetums and Mormodes.—These deciduous and remarkable-flowered Orchids require similar cultural conditions. During the growing season they thrive in an exposed position in the warmest house, lightly shaded from strong sunshine during the early stages of growth. Later on, full exposure is necessary to ripen the growths and copious supplies of water at the roots may be required. When growth has ceased and the leaves begin to fall, the plants should be removed to a light, airy position in the intermediate house, and only sufficient water need be given to keep the bulbs in a normal condition. Plants that are commencing to grow should be turned out of their pans and all the old compost shaken off, decayed roots cut away, and useless back bulbs removed. Use well-drained pans, and a compost of equal parts of Osmunda fibre and Sphagnum-moss cut moderately fine, adding a liberal quantity of coarse silver sand. These Orchids grow better when the new roots can reach the sides of the receptacle quickly, therefore over-potting should be avoided, but firm planting is essential. Water very carefully until the new roots are well through the compost, and take care not to allow moisture to collect around the young growths.

Oncidium cucullatum and its varieties.—This group of small-growing Orchids thrives in light, airy positions in the cool house. Extreme dryness at the roots should be avoided, and after the flowering period is over repotting may be done, using small pans and a compost of A.1. fibre and Sphagnum-moss with sufficient crushed crocks to keep it porous. Firm potting is necessary and water should be given sparingly until the roots are established in the soil, when the supply may be increased.

Oncidium chierophorum.—This fragrant, small-growing, Colombian species, the flowers of which are produced from matured bulbs during the autumn and winter months, should now have its young growths well advanced. New roots are produced as the bulb is beginning to swell, and during that period any necessary root disturbance may be accomplished. Use well-drained pans and a compost similar to that advised for O. cucullatum, and grow the plants near the roof-glass at the warm end of the Odontoglossum house. Water very carefully until the roots are showing near the sides of the pan, when more may be given.

THE KITCHEN GARDEN.

By Allan Falconer, Gardener to the Cheadle Royal Mental Hospital, Cheadle, Cheshire.

Second-early and Main-crop Potatos.—Many different methods, and times, are adopted for planting Potatos, and no doubt when these notes appear in print many acres will be planted, but much depends on the soil and district, and while one may risk a certain amount by early planting, it is not advisable, where late frosts often occur, to plant too early, as damage by frost often reduces the crop. Assuming that the sets were put into sprouting trays and have now good, strong sprouts, which have been kept well up to the light, a week or two makes little difference; the shoots soon appear above ground as the weather becomes warmer, and in cold districts the end of April is a suitable time to plant Potatos for the production of exhibition tubers, as there is less risk of their being checked. Before planting, the tubers should have all but one or two strong growths removed, and any with weak or very thin growths, or with a slight curl at the tips, should be eliminated, as these are invariably affected by leaf-curl and mosaic disease. I am strongly of the opinion that if more care was taken in the selection of planting tubers, better crops would be the result. During the early part of the growing season, all plants showing leaf-curl and mosaic should be pulled up and burned. The question of varieties to suit different soils and districts may be left to the grower, as some varieties will be found more suitable than others. The ground for Potatos should be prepared by incorporating plenty of half-decayed manure some time in advance of planting. On heavy soils the drills should be opened out either with a hoe, or plough, and the manure placed in the bottom; dibbers should not be resorted to. Set the tubers in the drills sixteen to eighteen inches apart, according to the varieties, with three feet between the drills for strong-haulmed varieties; for second earlies two feet between the drills, and twelve inches between the tubers will suffice. Much controversy has arisen as to the suitability of using artificial manures, but there is no doubt that they are an asset on some soils, and much depends on circumstances. Exhibition Potatos on heavy land will require planting in, and covering with light, sifted soil containing plenty of leaf-mould, to which may be added short lawn mowings.

Vegetable Marrows.—Raise seedlings for the main crop in boxes or pans in heat, and so soon as they are large enough pot them into four-inch pots and place them in a frame. They should be ready for planting out at the end of May or beginning of June. If early planting is practised some protection should be afforded during cold nights. Old hot-beds from which crops have been cleared make excellent places for growing Marrows.

PLANTS UNDER GLASS.

By J. Coutts, Assistant Curator, Royal Gardens, Kew.

Reinwardtia trigyna.—The species, and R. tetragyna, with their yellow flowers that are borne in great profusion, are useful for winter decoration in the conservatory and greenhouse. Cuttings root readily at this season of the year, in a case with slight bottom heat. During the summer they grow freely in a cool greenhouse, but are, however, very subject to attacks of red spider; this should be guarded against by maintaining cool and moist atmospheric conditions, and by the vigorous use of the syringe. The plants require to be stopped several times to induce them to form a bushy habit, and old plants may be cut back and grown on for a second year. Young plants, however, are more satisfactory, and good flowering examples may be produced in five or six-inch pots.

Winter-flowering Begonias.—B. socotrana and tuberous-rooted hybrids should be increased by means of cuttings so soon as they are available, usually towards the end of April and during May. The shoots that develop from the bases may be secured and inserted singly in small pots; they should root readily in a warm case with bottom heat, in a temperature of about 60°. When rooted, they may be stood on a stage close to the roof-glass, and during the summer they should be grown in an average temperature of 55° to 60°. These Begonias, if grown under conditions slightly closer and warmer than those afforded for ordinary tuberous-rooted Begonias, make strong, sturdy growths, well fitted to withstand adverse winter conditions. They are, however, subject to attacks of Begonia mite. A few of the best varieties for general cultivation are Exquisite, Optima, Fascination, Mrs. Heal, Conquest, Orange King, Her Majesty and Emita; these are all single-flowered, and are the most suitable for growing in the immediate neighbourhood of London, for a few hours' fog will destroy every flower and bud on the double and semi-double varieties. This difficulty does not, of course, arise in the open country, where all the double varieties may be grown successfully, a few of the best being Eclipse, Elatior, Miss Clibran, Duchess of Westminster, Britannia, Altrincham Pink, Scarlet Beauty, Sunrise and Rose Queen. Begonia socotrana is such a distinct species that it is worth growing, apart from the fact that it is the progenitor of our present day race of winter-flowering Begonias. It is interesting in that it produces resting buds which enable it to withstand a long, dry period of several months. Tubers of this species may be started into growth during June for winter flowering, and it is desirable that the work of hybridising should be continued, as at present we have no yellow or white-flowered varieties in this class; for this purpose it is necessary to have tuberous-rooted varieties in flower during the winter. It is also possible that B. socatrana could be successfully used for breeding purposes with other winter-flowering species. It grows freely in a temperature of 60°.

FRUITS UNDER GLASS.

By T. Pateman, Gardener to Sir Charles Nall-Cain Brocket Hall, Hertfordshire.

Cucumbers.—Cucumbers may be raised and grown under conditions similar to those recommended for Melons in frames. Plants that were raised early in the year will now be bearing freely, and to keep them in a healthy condition frequent top-dressings of good rich compost should be applied; this will encourage the production of surface roots, and frequent applications of manure water will keep the plants in bearing for a considerable time if judicious thinning of the fruits is practised in the early stages. Cucumber plants, when in full bearing, will require copious supplies of water at the roots, and the house should be closed as early in the afternoon as possible, for Cucumbers revel in solar heat with plenty of atmospheric moisture.

Early Peaches and Nectarines.—Peaches and Nectarines growing in pots that were started into growth during December of last year should, if all has gone well, have passed through their stoning period, and the fruits may now be ripening. Continue to feed the roots to within ten days of commencing the gathering of the crop. The roots should be kept fairly moist, but, at the same time, it is not wise to over-water the trees at this stage; maintain a slightly drier atmosphere and expose the fruits to the sun to improve their colouring. These are important points to remember where good-flavoured fruits are required.

Vine Propagation.—Where young vines from eyes are being grown on for planting out in borders during the summer months, they should be kept moving by frequent repotting in fresh soil. If they are to be planted when in leaf, I would advise growing them in shallow boxes; these are removed easily and the roots do not become so matted as when grown on in pots. Where pot vines are required they should be potted on at frequent intervals, for vines are rapid root producers.

HARDY FRUIT GARDEN.

By T. E. Tomalin, Gardener to the Earl of Bessborough. Stansted Park, Emsworth, Sussex.

Woolly Aphis.—It is impossible to completely eradicate this pest by winter spraying, therefore infested trees should be examined occasionally now that insect life is becoming active again. Each patch of woolly aphis should be dabbed with a stiff brush soaked in methylated spirit, or a ten per cent. emulsion of paraffin and soft soap. If this operation is repeated at intervals during the spring months the pest will be greatly reduced. Woolly aphis is often found on the stem and roots of fruit trees just below the soil surface, from whence it migrates to the branches. Therefore to effect a complete clearance it is necessary to clear away the surface soil over an area of two feet from the trunk, down to the uppermost roots, and, if the aphis is present, spray thoroughly with the paraffin emulsion, or dust with Tobacco powder, afterwards replacing the old soil with fresh compost.

Apricots.—Trained trees of Apricots on walls will now require attention in the matter of disbudding and thinning out of the young growths before they become too advanced. All badly placed shoots and those growing at right angles to the wall should be removed first, the remainder being thinned out so that each growth has space in which to develop. At a later stage most of these may be stopped at the fourth leaf to form fruiting spurs, but here and there well-placed shoots should be allowed to grow unchecked, to replace older branches which may die off or become unfruitful. In the case of young trees that have not yet furnished their allotted wall space, sufficient suitable young growths should, of course, be retained for this purpose.

THE FLOWER GARDEN.

By J. G. Weston, Gardener to the Duke of Devonshire, Chatsworth, Bakewell, Derbyshire.

Hollyhocks.—Plants growing in pots from seeds sown last season, that were wintered in frames, should be planted out in their permanent positions. For many years, and especially in wet seasons, this old favourite has suffered greatly from the Hollyhock disease (Puccinea malvaecearum), so that seedlings are now depended upon as being less susceptible to the trouble than plants that have been propagated from old stools. By sowing seeds in late July and growing the seedlings on gently during the winter, the plants should now be strong and robust, and may be planted out safely. Plant them in well prepared soil, but do not use rank manure. A sunny position, sheltered from the prevailing winds, should be selected, as the tall spikes may be damaged very easily. Place strong stakes to the plants as the flower spikes develop, and tie firmly.

Mignonette.—This sweetly-scented plant is such a general favourite that a good supply is welcomed in every garden, large or small. To get early supplies, plants grown from seeds sown in pots last autumn or very early this season should have been hardened off, and may now be planted out. A sheltered and not too sunny border should be chosen, and the soil improved by the incorporation of good loam and some mortar-rubble, if necessary. It should be made thoroughly firm before planting, and the surface should be fairly dry at the time of this operation. Plants that have been grown in pots since last autumn to supply cut blooms are well worth planting out after the first crop of flower spikes has been cut. If given a little artificial manure in the border they will respond quickly and throw up a second lot of flower spikes, which will be found most acceptable for cutting before the spring-sown plants are ready. Keep a sharp look out for slugs, as they are especially fond of this subject. Regular dustings with old soot will be a great help in keeping them away, and when washed into the soil it is decidedly beneficial to the plants. Additional sowings of Mignonette should be made in the open according to requirements, at intervals during the next three months. Most of the leading seed firms supply good strains of Giant White and Crimson, while Machet, Bismarck, and that old variety Miles's Spiral, are three excellent varieties to be depended on.

FOR NORTHERN GARDENERS.

By A. T. Harrison, Gardener at Jordanhill Training Centre, Glasgow.

Evergreens.—The numerous types of plants that are included under the title of Evergreens may now be transplanted with a greater measure of success than at any other season, and where extensive planting is contemplated, and preparations in the matter of soil cultivation are well advanced, the work may be rapidly proceeded with, leaving the more difficult kinds, such as Hollies and Evergreen Oaks until the end of the month. There is now such a wealth of choice evergreen flowering shrubs to select from that any attempt to make a list would extend these notes far beyond their limits, but wherever possible some of the choicer kinds should be tried in preference to coarse subjects, as Laurels and Privets. No attempt should be made to move old-established plants, either evergreen or deciduous, until they have been prepared some time in advance by cutting a trench all round, severing any strong roots encountered, and refilling the trench with a good compost. Fresh roots will form in this new soil, after which the plants may be moved successfully.

Forced Bulbs.—Most of the varieties of bulbs used for forcing are now past their flowering stage, and although Hyacinths and Tulips are seldom satisfactory when planted out after forcing, unless in a light, sandy soil, many of the other kinds such as Narcissi, Muscaris, Scillas, etc., are well worth trying, where an open site in the woodlands is available. These should be planted before the foliage has ripened in informal groups or clumps, keeping each variety separate, so far as possible, adding to them from year to year, as the time comes round, and so producing a most interesting and beautiful effect at very little expense. The newer and more expensive varieties should be planted in a border in the reserve garden, and there, under good conditions, they may be expected, in a year or two to recover any vitality they may have lost in the forcing process and produce splendid flowers. Where ground vermin are kept under control, Crocuses may also be planted out thickly, but this species has so many enemies that it is sometimes rather disappointing to find them devoured soon after planting them out.

Potatos.—The late or maincrop Potatos should now be planted whenever outside conditions permit and the ground is in good working order. These later varieties usually produce taller and stronger haulms than the earlier sorts, and consequently should be given more room, both between the rows and also between the tubers. Another reason for allowing more space for the later kinds is that they are usually left to mature their full crop before lifting, while the early varieties are in constant demand so soon as they are fit to use. In the early districts the young growths will now be well advanced, and so soon as the rows are clearly defined, the soil between should be stirred to encourage growth and check seedling weeds. On very early south borders where the earthing up has already been performed, it is advisable to devise some means of protection against sudden snaps of frost which frequently do considerable damage to the early Potato crop.

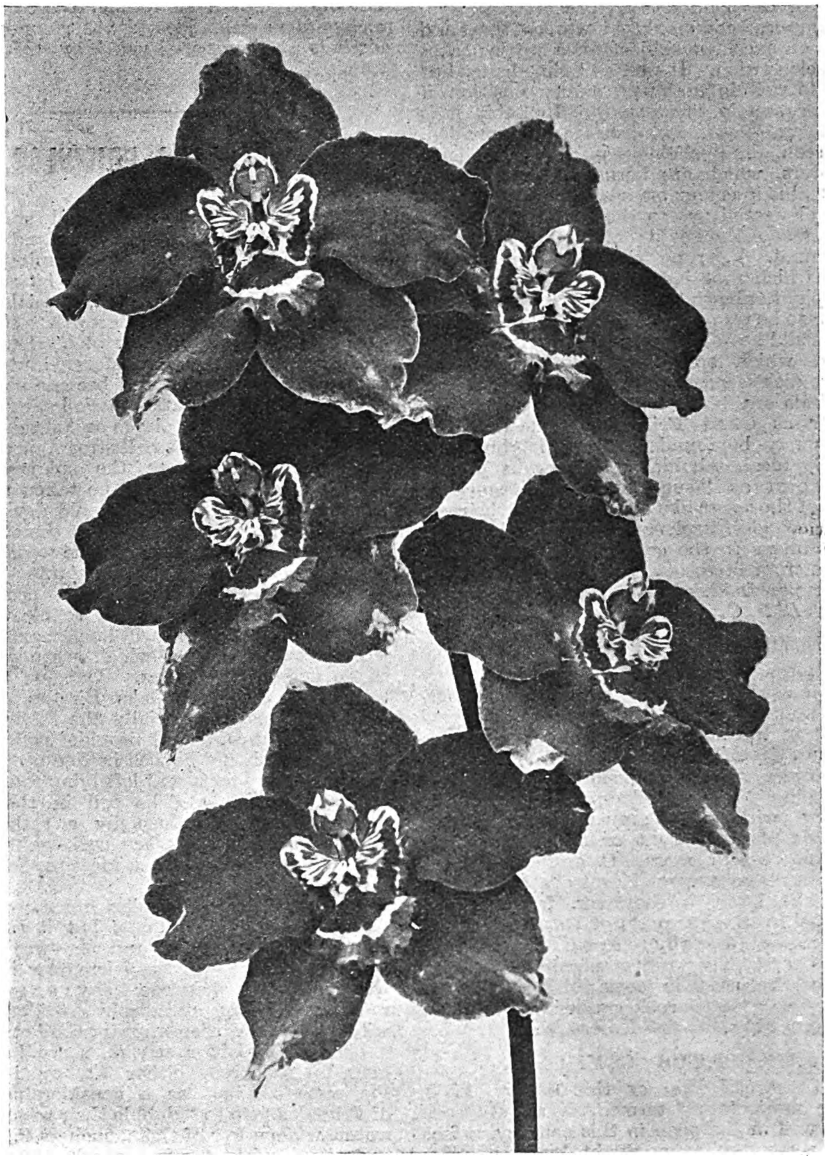

FIG. 135.—ODONTIODA RUBICON.

R.H.S. Award of Merit, April 11. Flowers red, rose, cream and yellow. Shown by Fred. J. Hanbury, Esq. (gr. Mr. Farnes), Brockhurst, East Grinstead.

(see p. 260).

ALPINE GARDEN.

VIOLA RUPESTRIS.

The flora of our country is peculiarly rich in species of Viola, if we include the many varieties of V. canina, V. tricolor, V. odorata, etc., and the majority are so well-known that they are hardly considered as suitable occupants of the rock garden. The plant now called V. rupestris is, however, sufficiently rare to be treasured by those who collect it. V. rupestris is the name used by Lt.-Col. Enever Todd and others, and the latest edition of the Kew *Handlist of Rock Garden Plants* agrees in the adoption of the specific name of Schmidt in place of De Candolle's V. arenaria.

This species, commonly known as the Sand Viola, is an excellent subject for a small pocket in the rock garden. It prefers light shade, but does quite well in an open, sunny position if the water supply is adequate. In habit it is compact and neat, with rosettes of rounded, dark green, and slightly pubescent foliage. The flowers, which are borne on short stems, are light blue in colour, possess a short spur, and are not elongated as are those of the common Heartsease. Although it does not creep along underground, V. rupestris will form young rosettes which root independently close to the parent plant, allowing of increase by division. It may also be propagated by seeds, but the gardener should keep a close watch on the oblong capsules, which split longitudinally without warning, dehiscence being so violent that one rarely finds any seeds in an old capsule.

So far as Great Britain is concerned, V. rupestris may be found in Teesdale, but it is extremely local, inhabiting the curious formations known as "sugar-limestone," so-called because of the sugar-like consistency of the rock. Modern geological books appear to give but little information as to the composition of this particular form of limestone, but there is no doubt that V. rupestris likes lime in the soil and abhors granite. *L. B. C.*

CHRYSANTHEMUM ARCTICUM.

This pleasing little species is very pretty when colonised in the rock garden, and apparently prefers a moderately dry and well-drained situation in full sunshine; it increases apace and is not fastidious with regard to soil.

The flowers are of appreciable size, the ray-florets being pink or lilac-pink, contrasting pleasantly with the greyish-green foliage. The whole plant is eight or ten inches high, occasionally rather more. C. arcticum was, I believe, introduced from Kamtschatka so long ago as 1801; it is, however, fairly widely distributed over other parts of Russia.

Propagation is easily effected by division, and this decidedly pretty plant may, with advantage, be used in considerable drifts or colonies, on a large rock garden. It flowers in June and July. *Ralph E. Arnold.*

PAROCHETUS COMMUNIS.

The Shamrock Pea, as this dainty, little, creeping perennial is termed, is seldom seen growing well in the open in this country, a fact which is accounted for, no doubt, by its inability to withstand the severity of our winters, for it is a native of Nepaul.

However, this should be no excuse for its neglect; it is propagated readily owing to its habit of producing roots at almost every node along the growths, and if these are severed, potted singly and then wintered in a cold frame, they will make fine flowering plants for the following season. I have treated this plant in this manner for a number of years, and the extra work entailed has been well rewarded by the production during late summer and autumn of large numbers of beautiful, rich blue, Pea-shaped blooms that arise from amidst its small, bright green, Shamrock-like leaves.

I am of two minds as to the conditions under which Parochetus communis will grow most successfully. Personally, I plant it in a warm, moderately sunny position, in soil that is rather light in nature, and under such conditions it never fails to produce quantities of blooms, no matter what the prevalent weather conditions may be, but with me it never survives the winter in the open ground, and so I have to resort to annual propagation.

On the other hand, I know of a garden that is blessed with a stream that has been planted in an ornamental manner, and although it is some years since I had the pleasure of seeing it, I remember well the use that was made of Parochetus communis, and the effect obtained. Whether it was planted in the bank or actually in the bed of the stream, I cannot say now with certainty, but it grew most luxuriantly and its masses of long, flower-bedecked growths trailed and revelled in the running water.

Thus I am loathe to commit myself as to the best situation for the lovely Shamrock Pea, but would recommend it alike to those who have rock gardens or are blessed with running streams, for it is a subject well worth extensive cultivation. *M. W.*

WOODLAND PRIMULAS.

In some gardens, large and small, there are often pieces of rough woodland or small copse, frequently used as dumping grounds for garden rubbish etc., the latter screened from public gaze by brambles, nettles and a tangled network of undergrowth. With some care and a certain amount of hard work, such untidy corners may be transformed into valuable features of the garden and become ideal homes for many of the Asiatic, shade-loving Primulas and other interesting plants and shrubs. Sometimes there is even a small stream or overgrown ditch running through the spinney—this is luxury indeed, and should be taken the fullest advantage of. Even if it should dry up in the hottest of the summer months there will be a certain humid atmosphere in the wood, which is greatly appreciated by these plants.

All the undergrowth should be grubbed out, particular care being taken to clear out the bramble roots or they will be a curse for ever; leave only those trees which are necessary for shade and artistic effect. One or two large timber trees, such as Oaks, Birches, etc., are a great advantage, especially the Silver Birches, which are graceful and provide useful shelter. The ground should be well broken up to a depth of at least two spits and left lying rough for the winter if possible. The soil in these copses is often very poor, usually a rather heavy, clayish loam, which, when well broken up and fed with humus makes an ideal medium for the Asiatic Primulas.

The question of design must, of course, be left to individual taste, but it is far more convenient for working and planting if it may be arranged in a series of irregular beds, with winding paths between, any appearance of regularity being studiously avoided, as the wilder such a garden appears the better.

Should there be a stream, a number of beds may be prepared, either at, or just above the water's edge, as a considerable number of Primulas love to "dabble their toes" in the water, while a few of them, such as P. Florindae and its *confrères*, will actually grow in the water. Any rough banks and corners where it is not possible to thoroughly dig the ground should be well broken up, as these may then be planted with masses of blue Primroses, some of the beautiful forms of the Oxlip, Cowslips and double Primroses. Some of the varieties of the woodland Violets and the Periwinkles are also valuable here, and will succeed in a position where little else will thrive.

A certain number of shrubs may also be used; many of the Primulas will do exceedingly well if planted beneath Rhododendrons and Azaleas. Lilies may also be planted with good effect, particularly that treasure of treasures, L. rubellum; this should be placed beneath low-growing trees or shrubs, and planted deeply in a compost enriched with well-rotted cow manure. L. giganteum, although slow to establish and flower, is a stately giant well worth waiting for.

I commenced these notes with the intention of referring to Primulas, so I must not wander far from the track; nevertheless, so much may be done and so many things grown in such a place as I have described, that it is possible to wander on for hours in the woodland scheme. We have a tiny wood here, with a more or less permanent stream running through it, that has given me great pleasure.

As to the species and varieties of Primula to be grown, I propose to mention a number that are already established and doing well here, not in any order of merit, but just as they occur to me as I glance at random through my notebook.

To commence with one of the fairly recent introductions from China, P. Florindae has already established itself well in our gardens, and it is no longer a rare plant. It prefers a moist place at the water's edge. In one garden in Scotland I saw it flourishing in the water. Should this very damp treatment not be available, however, there is no need to despair, for it is an accommodating plant, and will do well in a deeply-dug bed in a cool position, where it will throw up its giant, Cowslip-like heads in great profusion. There are sometimes so many as seventy or eighty of the large, fragrant and soft-yellow flowers in a head, they carry themselves well, and do not droop as in P. sikkimensis, which it resembles.

Of similar habits and requirements, although not having such enormous heads of flowers, are the forms of P. microdonta now available. P. m. alpicola, soft yellow; P. m. Ruby, deep wine colour; P. m. purpurea and P. m. violacea, whose names describe the colours, are all beautiful and valuable plants which seem to be very amenable to cultivation. With all these Primulas, however, it is advisable to have a batch of seedlings coming along in the spring, for few of them are really long-lived, and they all resent a superabundance of surface moisture during the resting period. A winter such as we have just experienced is likely to cause gaps in many of the beds. The seeds germinate freely if sown when quite fresh, and the resultant seedlings, if pricked out when well beyond the cotyledon stage, will be just right for planting out in the spring.

That well-known favourite, P. japonica, with its many beautiful forms and hybrids, is splendid for making colour splashes, and will seed itself and "carry on" without assistance. P. pulverulenta, with its handsome mealy stems and rich crimson flowers, should be used freely. There are several lovely forms of this now to be had, notably the Bartley strain, with flowers of a delicate shade of soft pink, varying to deep rose and almost white. There are a number of other forms, variously named but of very similar nature, all desirable and easily grown, although it should be confessed that most of these garden hybrids have not the robust constitution of their parents.

A lovely plant with a bad reputation is P. helodoxa. One of the best of the yellow, bog giants, it has a habit of dying in the winter; a lovely batch in our wood last autumn is now a mouldering mass. This past winter, of course, has been exceptional, and a worse season for Primulas could not be imagined, but P. helodoxa really is unkind. A fairly recent introduction from China, however, rather compensates for this. P. Smithiana is to all effects P. helodoxa, larger in all its parts, and with the tiers of rich yellow flowers rising to a height of three feet or more on sturdy stems. When in Edinburgh Botanic Garden last August, I was shown some rather poor Primulas of the helodoxa type, grown there as P. Smithiana, and surprise was expressed when I praised our plant as such a good thing, so I wonder if ours really is true P. Smithiana; whatever it may be, however, it remains a worthy plant, well replacing P. helodoxa where necessary.

P. sikkimensis is a charming subject for a moist corner; it is not large, seldom exceeding a foot in height, but the stems bear a number of sweetly-fragrant, sulphur-yellow bells, often daintily crimped at the edges. It is late in starting in the spring, and causes frequent spasms of alarm by its non-appearance in the early months of the year; about the middle of March, however, the fat leaf-buds commence to push through the soil and the graceful flower spikes soon ascend.

I should state that P. Florindae and the P.

microdonta forms also delay their start into growth, which often alarms those who are not well acquainted with the habits of these plants; I have seldom known them to default, however, and the late start is in many ways an advantage.

P. rosea is, I think, quite the earliest of all the woodland Primulas to flower; it was in full bloom here at the end of March, and the bright carmine flowers are very attractive by the water's edge. The flowers appear before the leaves, which follow when the former are well advanced. It loves to push its roots into the water, and is useful for naturalising on a steep streamside, where it will thrive happily, only needing to be pulled to pieces and replanted every two or three years. A form of great merit was raised in a famous garden near here, and is known as P. rosea, Brockhurst variety; the flowers are almost scarlet, so intense is the colour.

A species which is not a favourite with everybody is P. Poissonii. Its rather glossy leaves form a lax rosette from which arise slender stems bearing tiers of bright purple flowers. It has a long flowering season and needs growing well to be appreciated; when, as it is often seen half-starved and miserable, it is a dowdy creature with horrid, puce-coloured flowers. Give it, however, a deep, cool soil and plentiful supplies of well-rotted cow manure, then a different tale may be told. I used to condemn this plant unmercifully until one day, in a friend's garden, I saw it really doing well, and now I place it almost in the first rank of the Candelabra section.

Two hybrids of P. pulverulenta which I omitted to mention are P. Aileen Aroon and P. Red Hugh, both the result of crossing P. pulverulenta and P. Cockburniana. They are valuable plants, although their constitutions are none too strong. They are very similar, and one can well be grown for the other. Against the white-powdered stems the tiers of brightest terra-cotta red flowers show to great advantage. These are two of the handsomest of the garden hybrids.

Limits of space forbid that I should ramble further, but I hope I have conveyed some faint idea of the many joys to be obtained from a woodland garden; once the collection is started it is easy to accumulate as many of the available beautiful species and hybrids as there is room for. *Will Ingwersen, The Birch, Sharpthorne.*

TREES AND SHRUBS.

BLUE CONIFERS.

The ornamental effect produced by those Coniferous trees known, perhaps somewhat imaginatively, as "blue," cannot easily be surpassed; the depth and tone of the greyish-blue colouring is dependent, to some extent, upon soil and climatic conditions, but it is sufficiently fixed in these beautiful trees to guarantee for them an unique and unassailable position in parks and gardens.

Some sparkle and scintillate as hoar frost, others, under the influence of certain skies and lights, are really blue, and all is alike beautiful beneath summer sun or winter cloud. As isolated specimens in parks or on lawns, certain varieties are unsurpassed, and their counterparts in miniature are available for the rock garden.

For bold grouping, Coniferous trees are unexcelled—they bring into our home gardens something of the atmosphere of the Rockies, of northern Europe, and of the East, and I know of no other Order of trees or plants so capable of ennobling parkland or garden as do Conifers.

When grouping these it is most essential that the individuals should have ample room for development; there are, I believe, more Conifers ruined by overcrowding and thus impeding the free access of air and light, than from any other cause.

A pinetum is scarcely possible of realisation except in the larger establishments, but what is more beautiful the whole year round than a sufficiently large area discriminately planted with Conifers in their varying shades of green, gold and blue, the last-named serving to accentuate the colouring of the others.

Cedrus atlantica glauca is scarcely equalled as a specimen subject for park or lawn planting; it is beautiful in a small state and truly noble, as are all Cedars, when mature. C. Deodara argentea and C. Libani argentea are other silver or blue Cedars, very attractive, but just lacking, perhaps, that tone of nobility which invests C. atlantica glauca with unexcelled grandeur.

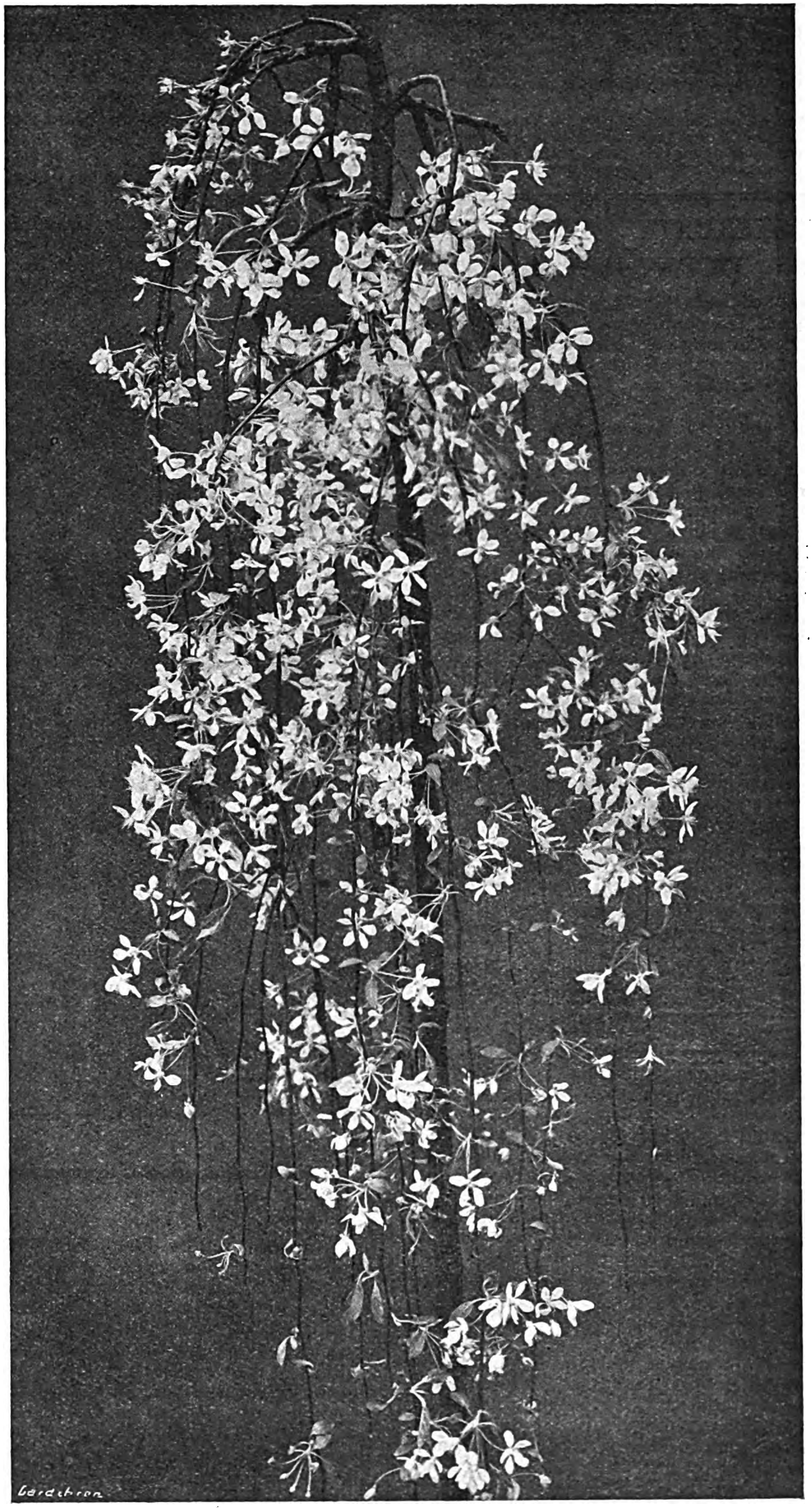

FIG. 136.—PYRUS MALUS, RUSSELL'S WEEPER.
R.H.S. Award of Merit, April 11. Flowers white. Shown by Messrs. L. R. Russell, Ltd.
(see p. 270).

The glaucous forms of Cupressus lawsoniana are numerous, of which striking examples are Triomphe de Boskoop, Silver Queen and monumentalis glauca.

Picea pungens glauca and the elegant form named pendula are finely coloured, and Abies lasiocarpa arizonica possesses a cream-coloured bark, which serves as a striking foil to the silvered foliage.

Of blue Conifers for the rock garden mention may be made of the dome-like Picea excelsa pumila glauca; and the glaucous blue Cupressus pisifera var. Sanderi, the foliage of which assumes a purplish colour in autumn, thus adding greatly to its attractiveness.

Pinus parviflora glauca is an interesting and beautiful little Pine, and Juniperus prostrata, in the fulness of time, will assume something of the desired bluish tone.

Of dwarf Cupressuses, C. lawsoniana nana glauca forms a small, compact dome of bluish colour, and C. lawsoniana Fletcheri, which has glaucous green foliage, is quite effective. This is but an abridged selection culled from a group of trees coloured with aesthetic loveliness and nobly formed. *Ralph E. Arnold.*

EDITORIAL NOTICES.

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THE STERILITY OF LILIUM TIGRINUM.[*]

LIKE that of the garden forms of L. candidum and of L. Hansonii, the sterility of L. tigrinum has for long been a matter of common observation among those interested in Lilies, and Dr. A. B. Stout, Director of Laboratories of the Botanical Garden in New York, who has given prolonged study to the subject of sterility in the genus Lilium, has published certain conclusions which he has reached in regard to it.[†]

Dr. Stout makes the suggestion that the species and the varieties of L. tigrinum are "self-fruitless because the essential organs—the pistils with the ovules and eggs and the pollen tubes and their sperms—do not react in the manner necessary for fertilisation." They do not react, that is to say, *pace* Dr. Stout, to their own pollen or to that of neighbouring examples of their own species, but as we shall see, Dr. Stout finds that they do react to the pollen of some other species of the same phylum.

The fact that the Tiger Lily will not respond to pollen of its own species is due, in Dr. Stout's view, to what he calls "physiological incompatibility in the processes of fertilisation necessary before seed can be formed." Dr. Stout has found this type of sterility very common among plants, both wild and cultivated, which have perfect flowers. It exists, he finds, among annuals that are propagated only by seeds, and in plants which are propagated vegetatively, and in the case of L. tigrinum, the plants of the same "clone" will not cross, "for the pollenation between plants is not crossing, but is in reality only the same as pollenating from flower to flower on one plant."

In the course of his researches and experiments, Dr. Stout has found that although L. tigrinum does not respond to pollen of its own species, it does respond to the pollen of certain other Lilies, such as L. sutchuenense, L. Maximowiczii and L. Leichtlinii (Figs. 137 and 138). It happens that these are members of the phylum, or tribe, of which it is convenient to regard L. tigrinum as the head, but a puzzling point is that Dr. Stout finds that the Tiger Lily hardly reacts or does not react at all to the pollen of all the members of its own tribal group. For example, it is not responsive, he finds, to pollen of L. warleyense, given by Dr. Stout as L. Willmottiae, or of L. pseudo-tigrinum. The identity of the Lilies to which Dr. Stout attaches these names is not clear, but as on its first public appearance, L. Willmottiae was unofficially named L. warleyense, it is probably the species referred to. It has been much confused with L. Davidi, and the latter with L. pseudo-tigrinum, a name so loosely applied that it may be almost any form of the Tiger Lily, so there may have been confusion in this case.

On the other hand, in 1921, Miss Preston, of the Central Experimental Farm, Ottawa, working independently of Dr. Stout, found[‡] that L. tigrinum reacted to the pollen of L. Willmottiae, and plants of that cross have flowered at Ottawa. There was an illustration of one of these hybrids in *The Gardeners' Chronicle*,[*] and in this the plant has a single bloom, borne upright—Isolirion fashion. It subsequently appeared, however, that as is the case with many Lilies in their first year of flowering, this upright carriage was abnormal, for in after years the flowers were carried in the manner normal in L. tigrinum.

Dr. Stout's researches have led him to the conclusion that there is no ground for the commonly accepted view that to induce L. tigrinum to set seeds it is only necessary to remove the bulbils which form in the axils of the leaves. The view is based on the belief that the production of bulbils and seeds simultaneously is more than the plant can support, and having been brought up in that belief I have always accepted it. It is no blind acceptance, however, for in 1911, two specimen plants of L. tigrinum, from which I had intentionally removed the axillary bulbils so soon as they formed, bore several capsules of fertile seeds, and from that I inferred that the effect of the removal of the bulbils would always be the same.

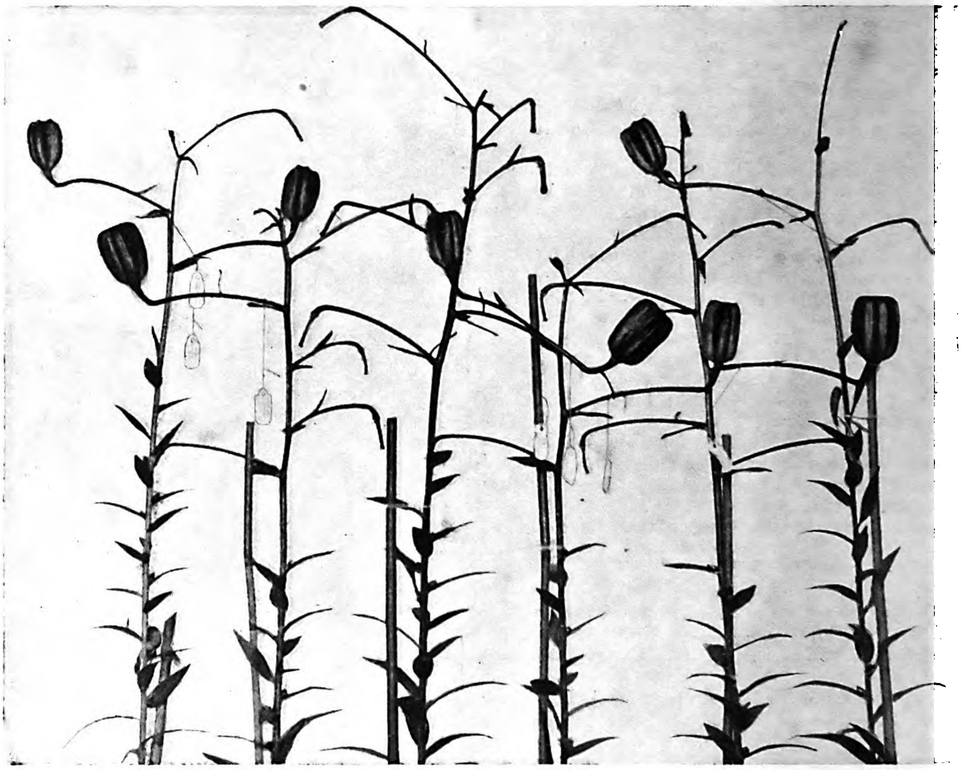

FIG. 137.—LILIUM TIGRINUM.

Fruiting specimens of L. tigrinum fertilised with pollen of L. sutchuenense, and raised in the Botanical Garden, New York.

As pointed out by Dr. Stout, Elwes, the monographer of the genus, observed that to obtain seeds of L. tigrinum, Mr. Hanson—a well-known amateur grower of Lilies at the end of last century—of New York, found it necessary to remove the bulbils; so that the notion already mentioned as to the procedure to be followed in order to induce the production of seeds of this species was not confined to this country. The plan is certainly effective in the case of L. Sargentiae, another bulbil-bearing species, but in the case of each Lily, a hot summer seems to have some bearing on the result.

In cultivated plants of L. tigrinum capsules are certainly rare, and Dr. Stout quotes the explorer, Mr. E. H. Wilson, as advising him that in his travels in Asia he never saw the Tiger Lily in fruit. The fact, however, that in *Lilies of Eastern Asia*, the fruit of L. tigrinum is described, seems to point to the fact that a capsule was available for the purpose. The scarcity of illustrations of capsules of this species is significant, and neither in Redouté[†] nor Elwes[‡] is there a drawing of a capsule. In *Genera Plantarum*[*] there is a figure of a capsule, but the shape is suspect. Hybrids of L. tigrinum with Lilies outside its own phylum are not unknown, and in 1881, Mr. James Mangles, of Valewood, Haslemere, whose name is associated with the earliest known hybrids of Himalayan Rhododendrons, flowered a cross he had made between L. tigrinum and L. croceum. It was described at the time as having yellow blooms like those of L. Leichtlinii but darker in colour.[†]

The sterility of L. Hansonii to the pollen of its own species is very marked, but it hybridises freely with L. Martagon and an almost endless variety of such hybrids has been made by one or the other, and especially by the late Mrs. Backhouse. In 1924, Miss Preston published an interesting photograph of a clump of L. Hansonii fertilised with pollen of L. Martagon.[‡] The clump was in the Arboretum of the Division of Botany at Ottawa, and almost every pollenised flower developed a capsule of fertile seeds.

L. croceum is another species which is usually, but not always responsive to its own pollen, but in this case, pollen of a neighbouring plant is generally effective. Plants of the group of Lilies loosely called L. elegans or Thunbergianum rarely produce capsules, but I have known them to do so in the only two baking summers we have had in the present century—1911 and 1921.

The lack of response to their own pollen shown by the garden forms of L. candidum has long been noticed and while much has been written on the subject no satisfactory conclusion has been reached about it[||]. The garden forms are usually responsive to the pollen of L. testaceum, itself a hybrid with L. candidum for one parent, and the progeny is always of hybrid character.

The sterility of Lilies is a matter more for science than horticulture, and does not interest gardeners particularly, because it happens that most of those Lilies which seem to be naturally

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[*] The capsules, seed and seedlings of the Tiger Lily, L. tigrinum. A. B. Stout in *Bull. Torrey Bot. Club*, Vol. 53, p. 269, May 1926.

[†] A. B. Stout in *Bull. Torrey Bot. Club*, Vol. 53, May, 1926.

[‡] *Gard. Chron.*, Nov. 8, 1924, p. 320.

[*] Nov. 8, 1924, Fig. 118, p. 321.

[†] *Les Liliacées*, Vol. 7, Pl. 395, 1812.

[‡] *Mon. Gen. Lilium*, Pl. 38, 1881.

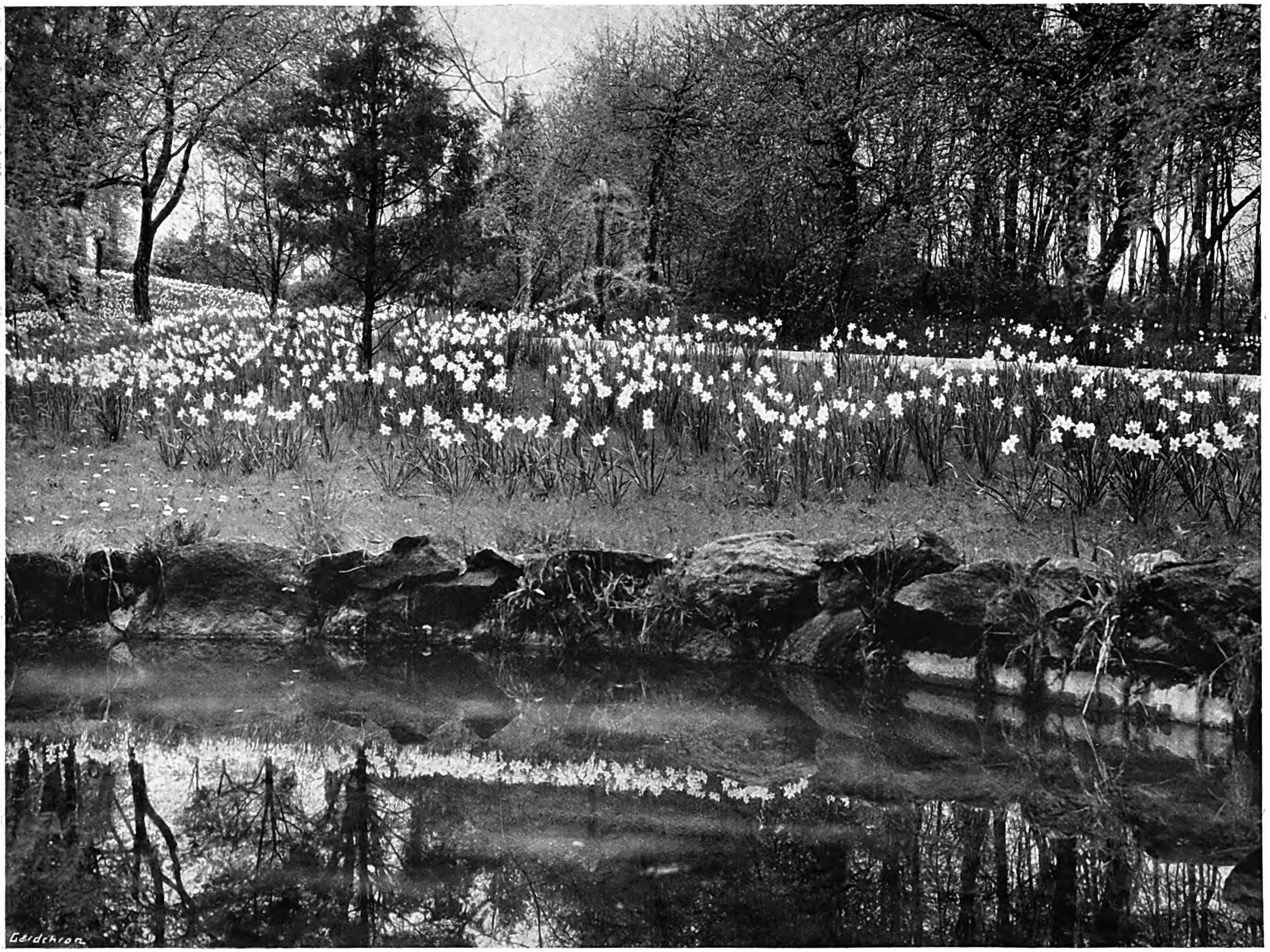
[*] *Nees ab Esenback*, Vol. 2, P. 140, 1843.

[†] *The Garden*, August 6, 1881, p. 137.

[‡] *Gard. Chron.*, April 18, 1925, Fig. 113.

[||] Grove in *Gard. Chron.*, July 10, 1915, p. 20.

Supplement to the GARDENERS' CHRONICLE.



DAFFODILS BY THE WATERSIDE AT KNOLLWOOD, NEW YORK.

sterile are propagated so easily by axillary bulbils or by scales that the supply is more than equal to the demand. L. candidum is an appropriate illustration of this, and L. tigrinum and L. croceum are others. The garden forms of L. candidum are not propagated by seeds, yet their propagation in other ways is so simple a matter that the supply of bulbs is plentiful.

It should be remembered, too, that when L. tigrinum or any other Lily is fertilised with the pollen of another species of the same phylum the result is a hybrid. L. tigrinum is so old a Lily that it has probably more relations than any other species. How far these are the result of natural selection and of human effort is an interesting problem on which Dr. Stout's researches may throw some light. In any case his investigations are of great interest to lovers of Lilies, and it is to be hoped he will continue them.

The photographs (Figs. 137 and 138), are reproduced by courtesy of Dr. Stout and the Torrey Botanical Club. *A. Grove.*

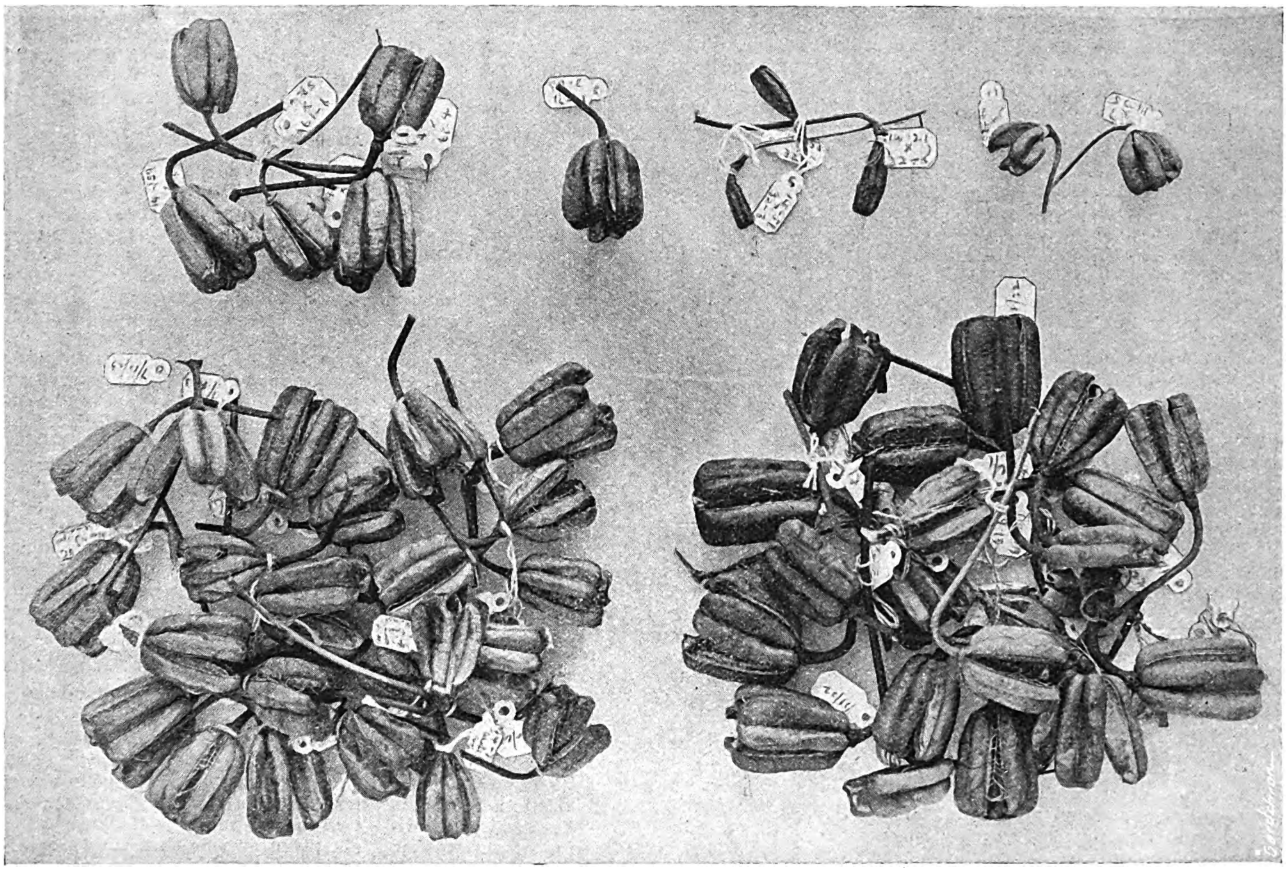


FIG. 138.—LILIUM TIGRINUM.

Top row, left to right: Capsules of L. tigrinum fertilised with pollen of:—1, L. Leichtlinii; 2, L. davuricum var. Wallacei; 3, L. Willmottiae (probably L. warleyense); and 4, capsules of L. Wilmottiae (?) fertilised with pollen of L. tigrinum. Bottom row, left to right capsules of L. tigrinum fertilised with pollen of:—5, L. sutchuenense; 6, L. Maximowiczii.

TRESPASSERS AND THE LAW.

The subject of trespassers and trespassing is one of the most important and most frequent branches of the law with which the gardener comes into contact, and yet it is, I think, the one by which he is most frequently confused. Ask three men when you may prosecute, summon, or bring an action against someone who has come on to your land without your consent; one will say it is necessary to show that some damage has been done; another that damage or no damage, the trespasser is liable; and the third that the damage must be appreciable. All are right to a certain degree, and yet all are wrong.

The cause of this confusion is probably the fact that there are two kinds of trespass with which we have to deal. The first is the civil trespass, where an occupier of land brings an action against anyone who comes on to his property without his consent, for the recovery of damages by way of compensation for the loss he has sustained; and the second kind is the trespass to which the ubiquitous notice-boards warning trespassers that they will be prosecuted with the utmost rigour of the law, which is really a kind of criminal action and is heard before the magistrates in the local police court.

Let us deal first with the civil action of trespass. The law considers that any intrusion on to a man's property, however slight it may be, is a wrong for which an action may be brought against the intruder. In this sense the sitting on a fence dividing two properties is a trespass, and so is the throwing of a stone on to another person's land, and since such small intrusions are regarded as acts of trespass, if a man walks over your land, even although he does not do any injury to it by doing so, he commits a trespass for which he may be made liable.

Thus, in the case of civil actions for trespass, there is no necessity for the occupier of the land to prove that any damage has been done, such actions are known as actionable *per se*, and nominal damages will be awarded on mere proof that the trespass has been committed.

In practice, however, such actions are not very often met with, as the expense incurred in bringing them is not small, and unless the trespass is very extensive and the damage appreciable, they are not worth the trouble and money they involve. In addition, of course, the majority of trespassers are small boys or men without any means, so that it is very unlikely that the occupier who takes the trouble to bring an action against them would ever recover his own costs, let alone any damages that the court may award him.

The right to bring a civil action for trespass then is not such a blessing to the landowner or his tenant as it might at first sight appear to be. The subject of civil trespass has, however, one good point that should not be overlooked. If a man comes on to your property without permission, he is guilty of a legal wrong, and so he may be ordered off and if he does not obey this order he can be turned off by force, provided no more force than is necessary to remove him is used—the fact that he is a trespasser does not give the owner of the land any right to maltreat him, and if more force than is necessary is used the unfortunate occupier may find himself defending an action or summons for assaulting the trespasser.

Lastly, on the subject of civil trespass there is no objection to setting a trap, provided it is not a man-trap or other dangerous machine, to catch a persistent trespasser; a properly treated plank over a dike or a carefully prepared bar in a fence, has been known to deter even the most persistent wrongdoer against whom it is useless to bring a legal action to maintain one's legal rights.

"Trespassers will be Prosecuted."

To the lawyer the "Trespassers will be Prosecuted" notice-board has long been known as the "wooden liar," as indeed it is, for a trespass proper there can be no prosecution, and it is owing to this fact, no doubt, that many people assume that unless a man does some damage to your property you cannot bring any action against him. Certainly you can bring no "criminal" proceedings against the wrongdoer, but, as we have seen in the case of a civil action for trespass; there is no necessity for the injured party to show that he has sustained any loss or that any damage has been done in order to succeed in his action.

To return, however, to the "Trespassers will be Prosecuted" notice-board type of action against an intruder, although it may not be possible to prosecute him for trespass as such, it more often than not happens that the trespasser makes himself liable to a prosecution in the Police Court, under the Malicious Damage Act of 1861. Under the provisions of this Act, an offence is committed whenever anyone "unlawfully and maliciously commits any damage, injury, or spoil to or upon" any property. This is an offence which may be charged at the Police Court and a fine imposed on the wrongdoer, and it is usually a much more useful method of putting a stop to persistent trespassers than commencing a civil action, moreover, it has the advantage of being much less expensive and troublesome.

At first sight it would seem that the inclusion of the words "unlawfully and maliciously" in the text of the statute might prevent any proceedings being taken in a great number of cases, but, fortunately, the law does not in this case attribute quite the same meaning to the word malice as we do in the ordinary course of conversation. It does not mean that the defendant must have been actuated by some sense of spite or ill-will against the owner of the property, and that what he did was out of spite. For the purpose of the Malicious Damage Act of 1861, the word "maliciously" should be understood as meaning purposely, or wilfully, rather than spitefully, the general principle being that where a man does an unlawful act, as trespassing, it is a presumption of law that he did it with the intent to produce the consequences which followed. Thus it will be seen that it is not a very difficult matter to prove malice in such cases.

Some difficulty may arise, however, as to whether the nature of the damage is such that a conviction can be obtained for the damage, although it need not necessarily be substantial it should be appreciable. It is generally considered no offence against this Act to pick wild Violets or Primroses, although, of course, it would be if they were growing in a garden or cultivated; but proceedings may be taken under this Act if the trespasser does any damage to gates, fences or trees, and the Act contains special provisions which are applicable to trees, shrubs and underwood, and fruits and vegetables in private gardens.

To sum up, if a man comes on to your property, whether he does any damage or not, you can bring a civil action against him for trespass, although, as a matter of practice, such a course would only be taken in special cases. If he does any damage to the property, proceedings can be taken against him in the local Police Court under the Malicious Damage Act of 1861, and this is probably the most effective deterrent against the persistent and impecunious trespasser. *Harold Sharman.*

HARDY FLOWER BORDER.

PERENNIAL LOBELIAS.

Great strides have been made during recent years in the development of perennial Lobelias, and they now embrace a very wide range of colours, varying from rich purple to grey-blue. Besides the brilliant colouring of the flowers, many varieties also possess rich bronze, or dark crimson foliage, so that their ornamental value in the garden may be assessed easily.

The perennial Lobelias give the best results when planted in rather damp, partly-shaded situations, but even so, there are many positions where they will form attractive features in the garden. The maximum effect is obtained when they are planted in groups on the margins of ornamental ponds, massed in the bog or wild garden, or planted in large beds in the formal garden.

The modern race of hybrids may generally be regarded as hardy, but to prevent unfortunate accidents through the sudden advent of severe frosts, it is advisable to cover the crowns with an inch or two of ashes, or old leaves, during winter. During open weather in March the crowns should be lifted and divided into small pieces, each bearing one or two crown buds. The ground may then be dug well and manured, after which the roots should be replanted fairly close together.

During last summer, I noticed the following varieties doing remarkably well, and was greatly impressed by their beauty: Hamwood Pink, with charming, deep rose flowers, borne on spikes twelve to fourteen inches long, and with attractive foliage of a dark hue; Kimbridge, a vigorous Lobelia with bronze leaves and large, purple-maroon flowers; Delight, with flowers of an unusual shade of blue-grey, borne on tall stems; and Purple King, that has a distinct branching habit, and masses of rich purple flowers. *R. K.*

A REVISION OF VIOLAS.

(*Continued from p.* 231.)

Viola septentrionalis, Greene, the Northern Blue Violet, is widespread from Newfoundland westwards along the frontier. The type was found in rich soil in thickets near Ottawa. In flower it is not unlike V. Novae-Angliae, as Farrer states, or V. papilionacea, but may be distinguished by the fine and close ciliation of the sepals. Farrer refers to the invariably blunt end of the foliage, but the leaves are, nevertheless, pointed, although the apex is blunt. The flowers vary from deep violet to pale lilac, and are occasionally white or white suffused with violet. At Vincent Square last year the white form was shown under a fanciful title in compliment to a lady with the equally fanciful price of 7s. 6d. per cutting. V. septentrionalis may also be had from nurseries as V. septentrionalis alba (without any fanciful name), and presents no difficulties in cultivation. In nature the plant grows in gravelly soil in partial shade. There is a hybrid of this with V. cucullata called V. melissaefolia, Greene, from Prince Edward Island, which is stated to be a Violet of remarkable beauty, but which, so far, I have been unable to obtain.

V. silvestris, Reichenbach, is often confused with the Dog Violet, V. canina. The former has a central rosette of leaves (generally vanishing as the plant gets older), with the flower stems rising from the sides thereof; whereas V. canina has no rosette, and the central axis of the root is continued in a straight line into the floriferous stem. The flowers of V. silvestris (syn. V. silvatica) are reddish-violet, darker at the base of the petals; the spur is long, straight and violet, and the stipules are small, narrow and longly fringed. There are many forms—rosea, lilacina, pallida, leucantha, which explain themselves according to the colour of the bloom, and villosa, albido-tomentosa, rotundato-crenata and cordata, according to the pubescence or form of the leaves. It is a species of Europe, the Caucasus, Kashmir and the Canary Islands, always in moist woods, loving dampness and warmth, and not found in the extreme north.

V. sororia, Willdenow, the Woolly Blue Violet, is said by Mr. Bowles to have light blue flowers of great size. I think he has now lost the plant. I had seeds sent me from Paris, but nothing came of them. A plant I had last year, however, from the Morton Arboretum, Illinois, is now coming up strongly. According to authoritative descriptions the flowers seem rather overborne by the leaves; they are lavender to violet and sometimes white. The leaf-form varies from ovate to orbicular and reniform, running to a short, obtuse point. The seed capsules are mottled with brown. It grows in moist meadows, on shady ledges, and, as Farrer states, at the very dooryards, from western Quebec to New England, southwards to North Carolina.

V. spathulata, Willdenow, does not come from the Caucasus, Farrer having apparently here confused Mt. Elbruz in the Caucasus with the Elbruz Mountains in Persia, immediately south of the Caspian Sea, where it grows at about 6,000 feet. It is a dwarf plant (not more than three inches), stemless, with minute adnate stipules, belonging to the same group as V. Patrinii, with ashy leaves and stem; long, lanceolate leaves; rootstock covered with the debris of old leaves and small violet flowers on long stems and with short slender spurs. There is a variety pachyrhiza, which Boissier elevated into a species, found in the hills east of Hamadan and north of Mosul.

V. speciosa, Pantcic, is not V. macedonica (which is the Balkan form of V. alpestris), but is simply V. elegantula (V. bosniaca of gardens). *E. Enever Todd, Lt.-Col.*

(*To be continued.*)

THE GENUS PRIMULA.

(*Continued from page* 267.)

Atrodentata (W. W. Sm.) Dark-toothed P. (Denticulata.)

A small, smooth, or sparsely pubescent species, somewhat resembling P. farinosa in habit and flower. The thin, flaccid leaves are about one inch long, with blunt, narrowly spatulate blades contracted into a short stalk; their surfaces are minutely downy and the margins are furnished with sharp teeth. The flower stem is from two to three inches tall and terminates in a dense head of erect, lilac, pale mauve or violet, creamy-eyed, fragrant flowers, with slender, cylindrical tubes, twice the length of the calyx, and broadly heart-shaped, cleft lobes about a quarter-of-an-inch across when fully expanded.

The plant is found in moist places in the Zemu and Llonakl Valleys in Sikkim eastern Himalaya, at 15,000 to 16,000 feet above sea-level. It is also found on the grassy banks of streams in the shade of Rhododendrons in the Tsangpo Valley, in south-eastern Tibet, at 9,000 to 13,000 feet.

Culture: As for P. aequalis.

Atrotubata (W. W. Sm.) Purple-tubed P. (Malvacea.)

In this Mallow-like species the calyx exceeds the flowers in size, the leaves are one-and-a-quarter-inch to two-and-three-quarters inches long, heart-shaped at the base, rounded at the tip, margins coarsely toothed and fringed with fine hairs, thin in texture, hairy below. Flower stem four to eight inches tall, densely hairy, bearing two to three superposed umbels of many rose-pink to deep rose coloured blossoms with a crimson eye, on slender stalks three-eighths to half-an-inch long. Corolla five-eighths-of-an-inch across, divided into five egg-shaped, notched lobes; tube cylindrical below and constricted at the mouth, sparsely pubescent.

Flowers in July. Grows in dry, stony meadows, also in shady thickets, usually on limestone formations on mountains in south-western Szechuan, western China, at 6,000 to 11,000 feet above sea-level.

Culture: Fibrous, sandy loam in well-drained, half shady spot; protection from wet in winter is indicated.

Atuntzuensis (Balf. f.) Atuntzuian P. (Nivales-Pulchella.)

A diminutive species with a compact rosette of narrowly egg-shaped leaves about one-and-a-half-inch long, tapering to a winged stalk; they are dusted with yellow meal and have coarsely-toothed margins. The flower stem is two to two-and-a-half inches tall, and bears a cluster of two or three fair-sized, purplish-blue flowers at its apex, the corolla having rounded, notched lobes.

Flowers in June. This plant is found in rocky ground among short herbage on the mountains north of Atuntzu in north-western Yunnan.

Culture: Good rich loam, in a moist, half-shady spot; protection from frost is advisable.

Aucheri (Jaub.) Aucher's P. (Floribundae.)

A perennial species covered with short, glandular hairs. Leaves one to one-and-a-half-inch long, broadly lance-shaped, narowing to a short stalk, sparsely covered with white meal below; margins with blunt or sharp saw-like teeth. Flower stems about four inches tall, stout, covered with short, glandular hairs. Flowers in about three whorls of six to eight flowers on fairly long stalks surrounded by leaf-like bracts. Corolla lemon-yellow, three-eighths-of-an-inch across, deeply divided into five oval, fringed or toothed lobes, at times bifid at their tips; tube slender, about five-eighths-of-an-inch long, cylindrical below, much swollen upwards. Var. crenata (Jaub.) has crenate leaves; and var. incisa (Jaub.) has inciso-serrate leaves; these forms are not consistent.

The type flowers in March and April. It is found in moist, rocky places on the mountains of the Province of Oman, south-eastern Arabia.

Culture: Plant in good loam and leaf-soil, and treat as a frame plant.

Jaub. and Spach *Illus. Pl. Orient*, 1842, 1-3, t. 49.

AURANTIACA (W. W. Sm.). Orange-flowered P.
(Candalabra.)

This species produces a tuft of numerous, lance-shaped, thin, papery leaves, five to six inches long; more or less rounded at the tip, and tapering towards the base into a narrowly winged stalk. It produces one or two stout, smooth flower stems seven to ten inches tall, bearing two to six superposed whorls composed of from six to twelve deep, reddish-orange flowers on short stalks. The corolla is about three-quarters to one-and-a-quarter-inch across, and is divided into five oblong, notched lobes; the cylindrical tube is constricted at the throat and is about half-an-inch long.

Flowers in July. This handsome species inhabits moist alpine pastures and the banks of alpine streams on the mountains of north-western Yunnan at 11,000 to 12,000 feet above sea-level.

Culture: Rich, somewhat heavy loam in a moist or wet spot in full sun is indicated.

AUREOSTELLATA (Balf. f.) Golden-starred P.
(Amethystina.)

This species will probably prove biennial in cultivation. It is of tufted habit with a somewhat weak root-system. Leaves about two inches long, lance-shaped or narrowly oblong, pointed or blunt, distinctly stalked, somewhat thick and leathery; minutely glandulous pitted; margins with a stiff, membranous widely-toothed edge. Flower stems one to two inches tall, erect, fairly slender, smooth, bearing about six flowers in a one-sided umbel on short stalks. Corolla three-eighths to five-eighths-of-an-inch across, white with a bright yellow, star-shaped blotch in its centre; lobes contracted and toothed at the tip, slightly concave; tube cylindrical, about a quarter-of-an-inch lon g.

Grows in marshes in Bhutan, eastern Himalaya at 11,000 feet above sea-level, and flowers in July in its native habitat.

Culture: Fibrous loam and peat; keep very moist when in growth, but comparatively dry in winter; probably requires protection.

AURICULA (Linn.). Wild Auricula.
(Euauricula.)

A perennial with leaves two to four inches long, oval or obovate, entire or bluntly-toothed, fleshy, more or less mealy. Flower stem stout, two to seven inches tall. Flowers in an umbel of six to twelve in number. Corolla rich yellow, three-quarters- to one-and-three-eighths-of-an-inch across, mealy in the throat, fragrant or scentless, tube slender below, funnel-shaped upwards, a quarter- to half-an-inch long; corolla flat or slightly concave, divided into five heart-shaped or oval, notched lobes. Grows in crevices of rocks usually on limestone formations, ranging in its various forms from Dauphiné to Servia, northward to the Black Forest and southward to Sicily.

The following forms and sub-species are mostly very beautiful plants:—Var. ciliata (Moret), leaves oval, short, blunt, toothed, fringed, more or less glandular, not mealy; var. Obristii (Stein), leaves more or less glandular, not mealy, margins fringed with numerous hairs; var. Widmerae (Pax), foliage papery, not mealy, a curious form from the Black Forest; sub-species Bauhinii (Beck), a beautiful robust form with white, wavy leaf-margins, from the limestone cliffs of Lombardy; sub-species B. var. monacensis (Widm.), with narrowly oblong leaves free from meal, found on the peaty moors of Bavarian Highlands; sub-species B. var. serratifolia (Rochl.), has rounded-oval leaves, sharply and somewhat deeply toothed; sub-species B. var. exscapa (Widm.), flower stem extremely short, almost obsolete. All these forms have yellow flowers. *A. W. Darnell.*

(*To be continued.*)

HOME CORRESPONDENCE.

Award to Pyrus Malus Russell's Weeper.—I do not understand the action of the Floral Committee on April 11 in giving an Award of Merit to a Pyrus Malus, shown by Messrs. L. R. Russell, Ltd., under the name of Russell's Weeper. No doubt the merit of the plant amply deserves such an award, but it is a great pity to encourage the circulation of old plants under new names. I have known and grown this one for many years, at Aldenham, as P.M. Excellency, Thiel. *Vicary Gibbs.*

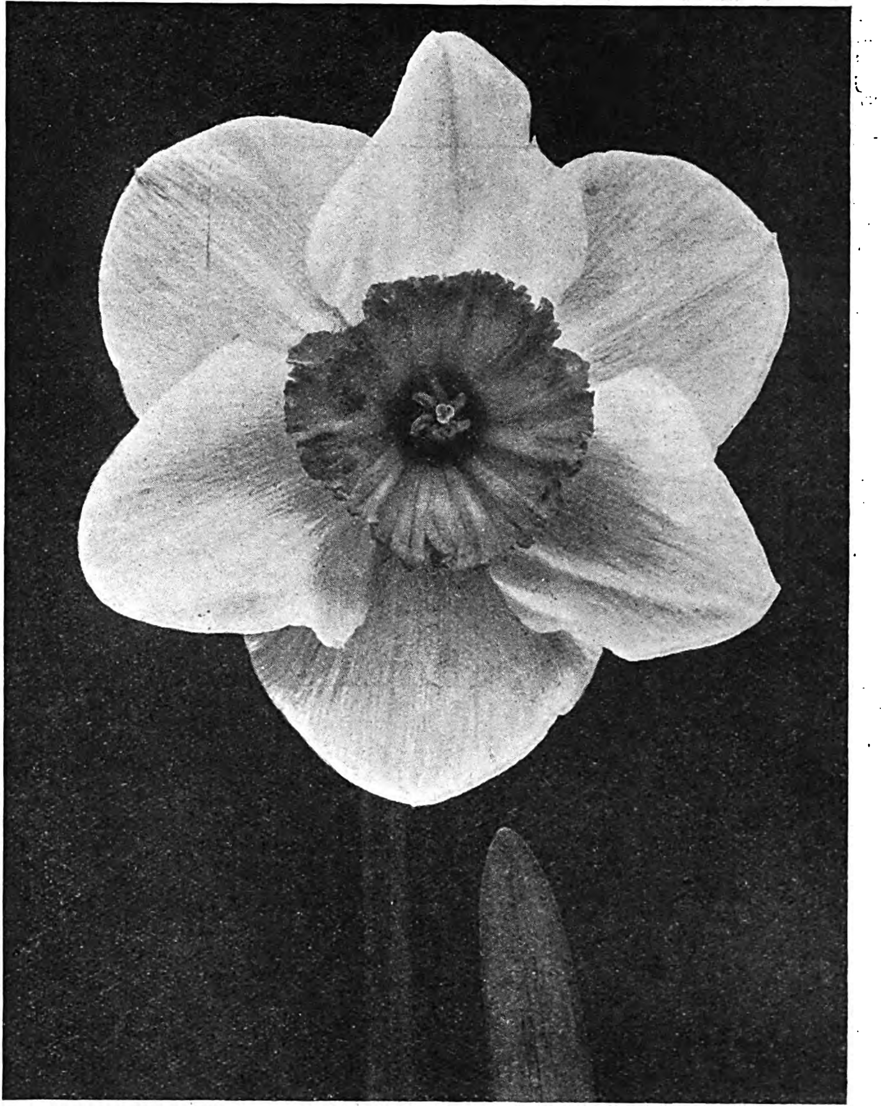


FIG. 139.—NARCISSUS CLWYD.
R.H.S. Award of Merit, April 11. Flowers cream coloured; cup yellow and orange.
Shown by Mr. R. F. Calvert. (see p. 270.)

Escallonia Edinburgh.—I was pleased to note *C. T.'s* remarks on this plant (page 235). It is indeed a shrub worth growing. Some of the Escallonias, although very beautiful when in flower, are of a straggling, untidy habit, being suitable only for covering banks, screens and fences, or for the wild garden. This Escallonia may be planted in positions where specimens of compact habit are desired, and isolated plants are attractive. The main stems grow erect and the young side-shoots are pendant, so that very shapely bushes may be secured by a little careful pruning. The leaves are small, and the flowers are a bright rosy-carmine. Our plants, which are growing in a large bed of mixed shrubs, have passed the winter undamaged by frost. Escallonia Edinburgh may be found listed in Messrs. Wood and Ingram's catalogue. *Colin Ruse.*

Potato Experiments.—It may be of interest to Potato growers to learn of two experiments made by me last year. I grew a crop the previous year of which a large number rotted in the clamp, although very few appeared to be diseased when they were lifted. The diseased tubers I placed on land that I intended planting last year, placing them as thickly as an average crop would lie on the soil. To my surprise, last year's crop grown on this land was practically free from disease, and showed no excess of disease as compared with tubers grown alongside under normal conditions. The other experiment was the growing of alternate rows of early and late varieties planted at the same time. The varieties planted were May Queen and Kerr's Pink. The former were lifted at the beginning of July, and the latter at the end of September. After the former were lifted there was an extraordinary development of the haulm of Kerr's Pink, which soon covered the whole space, four feet six inches, from which the earlies had been cleared. On lifting the crop, I found that I had 196 lbs. of Potatos in each row of sixty feet in length, which gives a yield of 18 tons 14 cwts. per acre, reckoning the rows at twenty-seven inches apart, or, putting it another way, I raised a half crop of earlies and a late crop of 9 tons 7 cwts. on the same land. I had another portion of the land planted with Kerr's Pink in the usual manner under similar conditions, with the rows two feet nine inches apart, but the yield was not nearly equal to those planted alternately. The lesson taught seems to be that with strong-growing varieties it is essential that they should have ample space to develop the haulm, and that this may be economically provided by growing alternate rows of earlies or second earlies; moreover, by this plan a heavier total crop may be raised than by any other means. *J. W. Lawry, Cornwall.*

Garden Accidents.—The article on forest accidents that appeared on page 221 of *The Gardeners' Chronicle* prompts me to write of the necessity of keeping a first aid case, complete with bandages, plaster, iodine, etc., in a readily accessible place in every garden. Accidents often happen, and prompt attention may often save serious trouble. Many gardens are remote from a medical practitioner, and much loss of time in serious cases may be avoided by having material for first aid at hand. During the war some experience, if only of a rudimentary character, was gained in first aid, and men became steeled to render aid in some really awful cases; in most gardens one finds men with war experience, well qualified to render first aid to a comrade in distress. Again, in most towns, classes are conducted by the St. John's Ambulance Association. All young men should take advantage of these, for they will find them not only very interesting, but highly useful, if only to be in a position, if called upon, to be of some service to others. Accidents in gardens sometimes occur through men not paying strict attention to the correct method of using tools. I have known several cases where the advice of the man in charge has been ignored, with bad results. All head gardeners and foremen should keep a sharp look-out for the misuse of tools. Accidents, however small, should be reported at once, with all particulars, to the proper quarter, so that much trouble may be avoided later should a claim have to be made under the Workmen's Compensation Act. *A. Falconer, Cheadle Royal Mental Hospital, Cheshire.*

Forced Rhubarb.—It is gratifying that the subject of forced Rhubarb has aroused so much interest, but I certainly did not anticipate that my article would be made the occasion for a violent attack on Rhubarb as an article of diet. Those of your correspondents who give such illogical reasons for a boycott as the fact that Rhubarb is not a fruit, or that it can only be eaten with sugar, may safely be left to promulgate their peculiar views to their hearts' content, no one will be the worse or the wiser. But the allegation that Rhubarb is a poison is not on quite the same footing. We all know how much easier it is to create suspicion than to allay it. The entirely unfounded allegation that Tomatos cause cancer has doubtless been the means of inestimable loss to growers of this wholly desirable fruit. It is obvious that *C. N.* and *Mr. Grigor Roy* have a prejudice against Rhubarb, and they trump up their charges by wholly unjustifiable assumptions based on hypotheses which have no basis in fact. It is incorrect to assume that every poison is cumulative in its effect, that so-called poisons in small doses may not be beneficial, or that if one part of a plant is deleterious the rest of the plant has the same effect. It is a fallacy to suppose that one may draw any helpful conclusion as to the edibility of a plant from its Natural Order; if this was so our old friend Solanum tuberosum would have to be banned. Indeed, if the doctrine of excluding as edible all vegetable products with doubtful family associations were rigorously applied the problem that would present itself to the human race would be one of accepting a risk of being poisoned as an alternative to the certainty of slow starvation. Your contributor *J. Britain* approaches the matter in the true scientific spirit, and although I do not share his doubts and fears, I support him in a demand for a properly conducted physiological and biochemical research. Meanwhile, I am content to rely on my own experience and that of my intimate acquaintances, some approaching centenarians, who have consumed Rhubarb freely from their youth onwards with, apparently, only beneficial results. *W. Auton.*

Bacteria and Soil Inoculation.—"Inoculation of bacteria into the soil to assist in the production of various crops is a valuable asset to the grower, and it would be interesting to have the opinions of others on this immensely interesting subject." This is a subject which was raised by one of your correspondents on page 235. Giving my experience, I planned, some sixteen or eighteen years ago, to inoculate the soil (or seeds) with cultures of nodule bacteria characteristic of leguminous crops, by a method which it was thought in those days would increase the yield of Peas and Beans. Broad Beans were used for the experiment, and cultures on gelatine slopes were made or obtained of the specific bacteria. Before sowing the seeds, the gelatine containing the bacteria was dissolved in warm milk, and the Bean seeds were soaked for a short time in the solution. The seeds were then sown in the ordinary way. By way of a control, a similar quantity of seeds from the same sample was soaked in ordinary milk for the same length of time, and then sown along with the others on the same plot of ground out-of-doors. Throughout the development of the Beans—from germination to seed ripening—careful observations were made and notes taken. The results of the inoculation were in the end found to be negative. About that same time other experimentalists obtained similar results from similar experiments. In some cases a little gain in yield from inoculated seeds—Red Clover, Lucerne, etc., was obtained, but in many others the inoculated seeds gave poorer results than the non-inoculated. Now why was this? What is the meaning of the negative results? The bacterial population of the soil is divided into many different families, each family having its own specific work to do and demanding its own special conditions. In a healthy, well-cultivated soil the bacterial population is immense, amounting from thirty to forty millions per grain of soil, but in a poor soil or where conditions are adverse, the population may dwindle down to a negligible point. The addition of a few thousands of bacteria from artificial cultures, to a healthy soil, may make no difference and is comparable to adding a few buckets of water to the sea! Again, to add thousands to a soil where the conditions are adverse is merely a waste of time, because they soon become inactive or die out from the same causes which bring down the population of beneficial bacteria to a low level in a poor soil. The better way to produce high yields of Beans or any other crop by or through the aid of soil bacteria, is not to trouble about adding to the bacterial population in an artificial way, but to bring about an increase in those which work for us, by good and deep cultivation of the soil, and to see that the conditions, such as suitable temperature, proper aeration, a sufficiency of lime, etc., demanded by the various families of bacteria, are satisfied. *J. Lancaster.*

Lime or Chalk.—The letter of Mr. George Murray (p. 234) illustrates vividly the value of practice. May I add one detail. I like to use dry powdery lime at planting time for such crops as Potatos, Brassicas and Peas, and on all the seed beds of the Brassica family. My motto is "little and often," as lime has a tendency to sink into the ground. I am pleased to say we have totally eradicated club root from the garden by the use of lime. *John Prince, Aberdare.*

Begonia Gloire de Lorraine as a cut Flower.—Begonia Gloire de Lorraine and its varieties are well-known for their winter flowering and are generally grown in the stove, in a warm, moist atmosphere. Private establishments grow this Begonia extensively for decoration, both in the conservatory and in the house; but how many people use it as a cut flower for decoration? Begonia Gloire de Lorraine, if cut when the flower buds are just beginning to open and put in water in a moderately warm room, will last for a fortnight in a fresh condition. By cutting the flowers and using them for this purpose the stools are encouraged to throw up strong growths from the base which are the best for propagating purposes; thus one is able to secure cuttings much earlier, which is a great advantage where a large stock is required. *J. W. B. H.*

CULTURAL MEMORANDA.

SOWING ANNUALS.

This is the most important time for seed-sowing, especially in the warmer parts of the country, but the operation should, in every instance, be governed by the state of the soil.

Stocks, Asters, Phlox Drummondi, Marigolds, Nemesias, and the other important annuals, are best sown in boxes or frames and transplanted later; under this treatment, delicate seedlings may be protected more easily from the ravages of slugs, birds and other pests. Many of the commoner annuals invariably thrive when sown where they are to bloom, and Godetias, Clarkias, Nigellas, Shirley Poppies, in fact, Poppies of all kinds, Lavateras, Larkspurs, and the various annual Chrysanthemums, all require to be sown now to ensure a good season of growth.

Many of the hardier subjects, such as Nigellas, and some of the Poppies, do better and bloom earlier if sown in the autumn, but such require close attention, and may only be relied on in well-drained soils; they are usually supplemented by a spring sowing to carry on a succession of bloom.

Numerous annuals never have a chance to do well through being left too close—a golden rule to remember in connection with sowing and growing annuals is to "sow thinly and thin early." There is no comparison between annuals on good ground, which have sufficient room to develop and show their beauty, and the stunted and starved patches of annuals sometimes seen.

LARGE-FLOWERED GLADIOLI.

These Gladioli, as distinct from the early-flowering varieties which were planted some time ago, should now be planted so soon as the ground is in a suitable condition. Firm corms of moderate size are more dependable than the monstrous ones sometimes recommended.

Of late years there has been a decided advance in the cultivation of Gladioli, and few subjects are more dependable to give good returns than the large-flowered Gladioli; their colours include nearly all the shades from pure white and yellow to dark crimson, blue and purple. A rich, deep soil and a sunny but not too exposed position are ideal for obtaining the best results, but if the staple soil is heavy and retentive of moisture, some leaf-soil, spent Mushroom-bed manure or old potting soil, with plenty of sand added, will tend to make it more workable and suitable for growing these subjects. If they are grown for cutting purposes, a bed in the reserve garden will be the best place for them, but groups of Gladioli are very helpful in the mixed flower borders—in such positions they may be planted fairly thickly and in good-sized clumps to produce a fine effect.

The old scarlet Brenchleyensis is still one of the best of its colour, while others that have proved very satisfactory are White Giant and White Perfection, Baron Joseph Hulot, Red Emperor, Marechal Foch, Willy Wigman, Halley, Niagara and Schwaben.

Gladioli of the Primulinus section have tall, branching spikes with smaller flowers; they may be procured in many delicate and refined shades and succeed under similar treatment as recommended for the large-flowered types. They should be grown in quantity where cut flowers are required for decorative purposes. These Gladioli may be cut so soon as a few of the blooms are open, for when placed in water they will continue to open and will last a long time; nothing is so suitable to use with the blooms as their own foliage. If it is not desired to cut the foliage, some leaves of the water Iris will form a good substitute. If the corms are planted at intervals during the spring the flowering period will be prolonged. *J. G. Weston.*

MARKET FRUIT GARDEN.

The rainfall of March (1·54 inch) was only slightly under the average for the month, but, as most of this fell during the last three days, it was, for all practical purposes, a dry month. During the greater part the ground worked well, and good progress was made with cultivation and hoeing amongst bush fruits. These now look well, and are making leaves rapidly, which should give the blooms some measure of protection in the event of late frosts. At the beginning of the month the buds of all kinds of fruit trees looked very forward, and dangerous early blooming seemed likely. However, a spell of cold weather came just in time to hold them in check. Only one of the varieties of Plums (Black Diamond) on my place was in full bloom by the last day of March. The first few blossoms were fully expanded on March 20, or just a week earlier than last year, when blooming was general at about normal or average time. With me, Plums and Pears promise an abundance of bloom, whilst Apples may have rather more than I dared hope for after my heavy crop of last season. Fortunately, the most valuable dessert varieties will give the best display. Late cooking Apples, with the possible exception of Newton Wonder, will be light on my place. A recent run through part of Kent showed a wonderful abundance of fruit buds on fruit trees of all kinds. This is not to be wondered at, because there was widespread failure in 1926, and last season, although the crop turned out rather better than was expected, the bloom was thinned very severely by frost in that district. The trees have therefore had a long rest from heavy bearing. What they will do this season remains to be seen. A fine show of flowers is certain; but much may happen between that and the harvest of the fruit.

Top-Grafting.

The top-grafting of Apples was done towards the end of March under excellent conditions. The sap was well up and the bark lifted easily. I want gradually to eliminate from my plantations some of the less valuable cooking varieties, and a start was made with Early Julyan and Domino, which nowadays are practically worthless. Blenheim Pippin was the variety worked on to most of them, with a few rows of Cox's Orange Pippin to divide the block and act as pollenators. Blenheim Pippin colours remarkably well in my conditions, and sells readily. It is also one of the most vigorous of dessert varieties, and should therefore serve well as the scion variety. There is, however, always an element of chance about top-grafting, unless one has used the particular combination of varieties before. Some are much worse than others to graft on to. The actual operation is always easy, and the "take" is nearly always good; but failure sometimes comes later. I find that this is less likely if one branch is left intact when the trees are headed down for grafting, and allowed to remain for a year. A branch near the middle of the tree is generally chosen, but in some cases it is more convenient to leave two or three smaller branches around the outside of the head. I do not really know why this practice should lead to more certain results, but I imagine that the branch serves in the first place to start the sap flow and later, possibly, to utilise some of the abundant supply of sap which might prove more than is good for the scions. Heading down a tree whilst leaving the root system intact is very violent treatment, and this means of slightly reducing the upset seems to be worth while. With regard to the actual grafting, I have tried several of the so-called improvements on ordinary crown or rind grafting, but found none of them to give any better results than the original method commonly described. Union seems to be more readily effected when the tapering base of the scion which goes under the bark of the stock is made as long as it conveniently can be, whilst the portion which stands out above the top of the stock is kept quite short. Two scions should be worked on to each stout stock, and three on to some of the very thickest, not because they are all wanted, but because they help the end of the stock to heal over rapidly. If only one scion is inserted on a thick stock, the opposite side of the latter is apt to rot before the new bark can grow over the wide surface. Wax which can be put on cold with a knife is better for top-grafting than a warm wax applied with a brush. There is always a little space between the bark and the wood of the stock on either side of the scion, and it is very important to seal this to exclude air. This is done easily with a cold mastic, whereas a thin wax is liable to run down under the bark where it is not wanted.

Red Spider.

Red spider is an increasing trouble on fruit trees in the open. It does not appear to be checked to any extent by moisture, as it is under glass, for the pest was prevalent in many places last year, when rain was very frequent. I find a good many of the eggs in two of my plantations, one of Apples and the other of Plums. These, unfortunately, are not killed by winter spraying with tar-distillate washes, although the species of red spider which attacks Gooseberries may be controlled readily by this means. There is evidence, indeed, that the pest has increased on Apples and Plums since the introduction of these washes, the reason being that a parasite which used to prey upon the red spider is destroyed by the spraying. This is not, however, a sound reason for giving up tar-distillate, which is invaluable for the control of aphides and Apple sucker. Other means should be adopted for dealing with red spider where it does damage. In the case of Apples the use of lime-sulphur as a preventive of scab checks the red spider in addition. Then there are several miscible oil washes which have recently been introduced which are claimed to kill the latter. There are winter forms of these washes which destroy the eggs, but, unfortunately, are less effective than tar-distillate against the eggs of aphides; and there are summer forms for use as contact washes. Another possibility being tried by some growers is colloidal sulphur, which is used at the rate of 4 lbs. to one hundred gallons of water, preferably with 5 lbs. or more of soft soap to give spreading and wetting powers. This wash is also effective against mildews, and gives promise as a preventive of scab. Colloidal sulphur may be mixed with any of the soapy contact insecticides commonly used in the growing season, and has the advantage that it is not caustic like lime-sulphur, and therefore unlikely to harm any crops. It may also be mixed with arsenate of lead, but in this case soap should be omitted.

Apples on Type II Stock.

I do not think I shall ever again plant Apples (with the exception of Bramley's Seedling and Blenheim Pippin) on Malling Type II, the stock known also as Doucin and English Paradise (not Broad-leafed English Paradise), and that on which most nurserymen supply trees ordered simply as being on Paradise. It is quite a good stock for bush-shaped Apples in sheltered gardens, as it is semi-dwarfing and brings the trees fairly quickly into bearing. My chief complaint against it for open plantations is its poor root anchorage, which makes the trees liable to be blown over. In one exposed plantation this happens to some of the trees every year in spite of staking. It is not an easy matter to stake a bush-shaped tree effectually. The stock also gives trees which are rather liable to leaf-scorch, and I think the fruit tends to lack colour. I like it, however, for Bramley's Seedling, which crops very regularly and heavily on it; and one is bound to use some dwarfing stock for Blenheim Pippin, which is so slow to come into bearing. For other varieties the so-called Crab stock seems to be best for my conditions. If one could get them, the very vigorous Malling Types 13 and 16 would no doubt be better still, because, being raised vegetatively, they would give more uniform trees than the seedling Crab or free stock. The choice between vigorous and dwarfing stocks naturally depends greatly on local conditions, but I think it depends also on the treatment the trees are likely to receive. If you are one of those growers who must prune hard, manure heavily, and cultivate to excess, then a dwarfing stock is necessary to act as a counter agent. If, on the other hand, you are prepared to prune lightly, be cautious with manures whilst the trees are young, and possibly grass down the plantation after the first seven or eight years, you will secure crops without undue delay and the trees will be quite satisfactory. Incidentally, this is a cheaper method of fruit-growing. I admit, however, that in some places trees on dwarfing stocks produce the largest fruits. I am thinking particularly of trees of Crawley Beauty on Crab and Paradise stocks at Wisley, the fruits being of such different sizes on the two that one would hardly take them for the same variety. Such a difference is, however, exceptional. It certainly is not so in my conditions. My finest specimens of Cox's Orange Pippin, for both size and colour, come from trees on free stocks in grass land. A block of the same variety on Type II gives me paler fruits which do not realise so much money, and I have had a lot of trouble from leaf-scorch.

Pear Canker.

Mine is not a good district for Pears. Owing probably to the wet, cold subsoil, they scab and crack badly. Some years ago I decided to try a few trees of Fertility, to see whether a coarser variety would succeed. The trees were planted in one of the driest plantations, and put right on the surface of the ground. They crop well and the same spraying as that adopted for Apple scab keeps the fruits clean. Unfortunately, however, the trees are very badly attacked by canker. Fertility often suffers from this disease, which has been shown to enter through lesions in the young wood made by scab. The damage is very serious and much wood has to be sacrificed, so that the trees become mere wrecks. If one could entirely eliminate scab the canker would presumably disappear, but it does not seem very hopeful. I shall persevere with the trees for a few more years to see whether they will get over the trouble as they steady down in growth, as Apples do with me. Conference behaves in much the same way. *Market Grower.*

APPLE SCAB.

At the present season all growers are concerned about the use of preventives for that bane of good cultivators, Apple scab. The object of this note is not to present the reasons for, and advantages of spraying, but to seek to discover why some trees habitually produce clean fruits without spraying.

Some months ago I suggested that shade had the effect of preventing scab. This, however, was negatived, after careful observation, by that experienced cultivator and writer, *Market Grower.* During last season I continued observations and found the same trees again gave clean fruits. In view of the experience of *Market Grower*, I looked about for some other reason than shade for this immunity from scab.

The worst varieties for scab I grow are Allington Pippin, Lord Derby, Newton Wonder and Worcester Pearmain. I have, as I stated a year ago, trees of the last named three sorts which always give a scab-free crop. I have no tree of Allington Pippin which does this, but I must say I have no Allington Pippin in partial shade. I am not now stressing the shade theory, but would point out that under similar circumstances different varieties give similar results in this respect.

In the past season I made a further interesting observation. Three years ago I had occasion to move a number of large, twelve-year-old bushes. These were carefully planted in trenched land, and did very well. Last season they gave a moderate crop, and there was never a scabbed fruit amongst them, even on Newton Wonder. They are completely in the open, so shade evidently was not the factor here. What then is the reason for the trees being different in regard to the fruits they produce? In the case of the newly-planted trees nutrition could hardly be over abundant, for a twelve-year-old tree would scarcely have an adequate root system in two years. I looked again at my shaded trees and found that their nutrition cannot be any too good for they are being robbed by the roots of the large forest trees which shade them; in one case to such an extent that the tree is only two-thirds of the size of those in the remainder of the row.

I am not in a position to state that nutrition is the dominant factor deciding clean or scabbed fruits, but when, on a place like mine, where scab is rife, and there are trees which are immune, there is obviously a reason, and only by taking into account all the circumstances may we expect to discover the secret. There may be others who have trees which produce unscabbed fruits, although scab is prevalent generally, and if they would make observations regarding situation and other factors, some very interesting information may be got together. There appears to be something more in it than the mere fact of scab spores floating in the air ready and able to disfigure any fruits unprotected by a film of chemical. Perhaps *Market Grower* may have trees of susceptible varieties in odd situations which act in the same way as some of my trees. *E. Brown, Hillside, Doddington, Sittingbourne.*

FOREIGN CORRESPONDENCE.

PACHYSANDRA TERMINALIS.

The subject of this note is extensively used in many gardens in this vicinity for planting as a ground cover beneath trees and shrubs. For this purpose it is admirably adapted, indeed, it would be difficult to find another plant that would endure our extreme climatic conditions and at the same time form such a solid carpet of rich evergreen growths, luxuriating and increasing under conditions which prove uncongenial or impossible to the majority of subjects used as ground-covers by the British gardener.

The Japanese Spurge, as this plant is commonly named, belongs to the Natural Order Euphorbiaceae, and has much the habit of Hypericum calycinum, being a semi-woody evergreen shrub, attaining eight or nine inches in height, and bearing dark, glossy leaves in clusters toward the ends of the growths. The leaves remain in good condition for two or more seasons. In the spring the purplish-green flowers are borne in short terminal spikes.

Pachysandra terminalis is propagated easily and quickly by means of cuttings taken in late summer and inserted in cold frames. By the following spring the rooted cuttings are ready for planting out in ground which has been prepared and enriched with leaf-mould or well-rotted manure; a distance of nine or ten inches may be allowed between the young plants, which, when once established, will make rapid headway without further attention. A variegated variety of this plant is in cultivation. *T. H. Everett, New York, U.S.A.*

VEGETABLE GARDEN.

WATER-CRESS.

The Water-cress is undoubtedly a very wholesome plant, possessing excellent anti-scorbutic properties. It is said to contain iodine, to which probably some of its virtues may be attributed, and is a highly agreeable edible plant to most people in its fresh, green state. Many who love a ramble in the fields in search of wild flowers have halted by the side of some refreshing brook to gather Water-cress, but it is not from the pleasant streams and brooks of England that our markets are wholly supplied, nor in them is the best quality of Water-cress grown, for like other edible plants, it is improved by cultivation. Not only are the stems and leaves larger and more succulent, but the flavour is greatly improved under cultivation, and it is an important and lucrative branch of market-gardening.

Widely used as a salad in this country, particularly during the winter and spring months, the consumption of Water-cress is very great, but it is even more widely used on the Continent, where it is served liberally with roast fowl and broiled joints, and sometimes also boiled and minced, like Spinach.

The Water-cress appears to have been known to the Greeks, both as an esculent and as a medicinal plant for disorders of the brain. In Pliny's time it was held in great repute, and we read also that Xenophon thought very highly of the plant as a strengthener, and recommended it to the Persians to give to their children for the purpose of strengthening them and adding to their stature. It was, perhaps, on this historic authority that the housewives of a century ago gave to their children in the spring of the year a "health-giving" draught which was a decoction of Water-cress, Brook-lime, Scurvy-grass and Oranges. It has been introduced into North America and some of our colonies. In New Zealand it forms a stem as thick as the wrist and almost chokes some of the rivers.

It is said that the ancients ate Water-cress chiefly with Lettuces, the stimulating properties of the former counteracting the coldness of the latter. It has also been stated that the Water-cress, in consideration of its being found indigenous in most parts of Europe and northern Asia, was probably one of the first green esculents employed by the early races that peopled those regions, and it is even suggested as having been, at a remote period, cultivated in some parts of northern India.

The first attempts, however, to cultivate Water-cress by artificial means in Europe appear to have been made about the middle of the sixteenth century, by Nicholas Meissner, in the numerous streams which abound in the vicinity of Erfurt, the capital of Upper Thüringia. The water and the soil suiting the plants, they thrived; Water-cress cultivation became a great pecuniary success, and the Erfurt Water-cress was renowned for its superior quality. This success resulted in many plantations being established in various parts of Germany and Holland, but the Erfurt Cresses retained their reputation for superior quality, and are still sent in large quantities to the Berlin market.

The Erfurt Cress plantations became so profitable that they were let at rentals which sounded almost fabulous, yet there was never any difficulty in getting these high prices. Water-cress plantations established in the neighbourhood of Paris also became extremely valuable as the demand in the French capital was very great, and at one time the value of the Cress sent to the Paris markets exceeded a million francs annually at pre-war values.

We read of Water-cress once growing in large quantities in the waters of Fothill Fields, Westminster, and even on the neighbouring banks of the Thames itself, but we do not hear of its cultivation in a systematic manner until the year 1808, when plantations were laid down at Springhead, near Gravesend, and large quantities of Cress of good quality were produced. When the success of these plantations became known other plantations were soon started in many parts of the country where suitable springs existed.

In the neighbourhood of London especially many of these plantations were formed, and although some have been done away with, others have taken their places further afield. Some idea of the importance of the industry may be gained from the fact that something like 8,000 or 10,000 bunches are brought into the London markets daily.

The plant, Nasturtium officinale, is a hardy perennial belonging to the Natural Order Cruciferae, which gives us so many varieties of vegetables. It varies greatly in the luxuriance of its growth; according to the situation in which it is found, and grows best in springs or clear running water, where the bottom is either sandy or gravelly. In such a situation it will sometimes grow a foot above the surface of the water, although its more usual height is six inches. When the plants are surrounded by other vegetation, or when they grow in running streams, the leaves become longer and of a much brighter green, but those of a brownish tinge are, however, preferred for the table. *A. N. R. S.*

SOCIETIES.

LONDON DAFFODIL SHOW.

April 17 and 18.—The annual show of Daffodils, arranged by the Royal Horticultural Society, and held at Vincent Square, Westminster, on these dates, was more successful than the recent inclemencies of the weather would have led lovers of this spring flower to expect. The hall was well filled with exceedingly good flowers, representing nearly all the eleven divisions into which Daffodils are classed. As is usual at special flower shows, the large trade exhibits provided magnificent displays, and the show-attending public owes a large debt of gratitude to the trade who, at such times, are untiring in their efforts to arrange collections worthy of themselves and the occasion. The competition generally was very good, and it is pleasant to record a great improvement in the quality of the amateurs' exhibits, which often reached a high standard of excellence. The arrangements of the show, however, seem open to improvement. That the classes were not arranged in sequence is a comparatively small matter, but, as these shows are intended to have an educational value, we suggest that those responsible should consider the advisability of indicating the nature of each class on the exhibitors' cards. The information that the class is for "Six varieties, Division 1a, three stems of each," can convey but little to the average visitor. There was a very good attendance and soon after the doors were opened the hall was comfortably filled with visitors, many of whom displayed a critical acquaintance with the finer points of the flowers and particularly the newer varieties. There were many new seedlings submitted for the Committee, and of these ten were recommended for Awards of Merit.

Narcissus and Tulip Committee.

Present: Mr. E. A. Bowles (in the chair), Mr. G. W. Leak, Mr. G. Monro, Mr. C. C. Titchmarsh, Mrs. Brodie, Rev. Rollo Meyer, Mr. H. G. Hawker, Mr. G. Churcher, Mr. A. W. White, Mr. C. W. Needham, Mr. W. Poupart, Mr. F. A. Secrett, Mr. J. S. Arkwright, Mr. F. H. Chapman, Mr. W. Slinger, Mr. G. L. Wilson, Mr. W. B. Cranfield, Miss E. Willmott, Mr. F. Barchard, Mr. P. R. Barr, Mr. H. Smith, Mr. J. D. Pearson, Mr. P. D. Williams and Mr. A. Simmonds (Secretary).

Awards of Merit.

Narcissus Comrade (*Div. IVa*).—A charming Leedsii variety with creamy-white rounded perianth segments; the frilled cup is a rich cream colour. A dainty little variety of good texture. Shown by Mr. William Welchman, Birdbeck House, Wisbech.

Narcissus Mystic (*Div. IVb*).—An attractive Leedsii variety with a white perianth, the segments being slightly waved; the flattened cream-coloured cup is edged with a narrow band of orange. It is a great improvement on the old variety Lavender. Shown by Mr. Guy L. Wilson, Broughshane, Co. Antrim.

Narcissus Red Sea (*Div. IIIa*).—This striking variety belongs to the Barrii section. The reflexed and curled perianth segments are cream-coloured and the crinkled cup is of rich orange-red. Shown by Mr. J. L. Richardson, Prospect House, Waterford.

Narcissus Hades (*Div. IIIa*).—A really brilliant Barrii Narcissus with a spreading, cream-coloured perianth, and a cup of a vivid shade of orange-red, devoid of other colour or markings. The flowers of this splendid variety are borne on tall, slender stems. Also shown by Mr. J. L. Richardson.

Narcissus Silver Plane (*Div. IVb*).—Belonging to the Leedsii section, this beautiful variety has broad, white perianth segments of fine texture, the flattened cup being an attractive shade of primrose-yellow. Shown by the Donard Nursery Co., Ltd., Newcastle, Co. Down.

Narcissus Narrabri (*Div. IX*).—A good Poeticus variety with rather small flowers of firm texture. The perianth is pure white and the small, cream-coloured cup has a reddish-orange margin. Shown by Mr. F. A. Secrett, Marsh Farm, Twickenham.

Narcissus Copper Bowl (*Div. IIa*).—This charming Incomparabilis Narcissus has a rich yellow, spreading perianth, and a rather deep cup of a fine shade of orange. Shown by Mr. Guy L. Wilson.

Narcissus Red Rim (*Div. IX*).—Another fine Poeticus variety with broad, white perianth segments that are lightly waved, and a small, yellow corona edged with orange-red. Shown by Mr. F. A. Secrett.

Narcissus Quartz (*Div. Ic*).—This beautiful Trumpet Daffodil has cream-coloured, spreading and waved perianth segments, and a rather slender trumpet of a deeper and richer shade, with a recurved and frilled margin. Shown by Messrs. Herbert Chapman, Ltd., Rye.

Narcissus Nissa (*Div. IIb*).—An attractive bi-color Incomparabilis Narcissus with rather small, rounded, creamy-white perianth segments, and a broad, golden trumpet-like cup with a reflexed margin. Also shown by Messrs. Herbert Chapman, Ltd.

Competitive Classes.

In the open classes the competition generally was good, and the exhibits were of high quality. The best twelve varieties of any division, three stems of each, were staged by Mr. J. L. Richardson, whose best varieties were White Sentinel, a large Incomparabilis; Kilter and Call Boy, two Barrii varieties with vivid coronas; Folly and Therapia, a medium Incomparabilis and a bright corona. Mr. R. F. Calvert was second, and his exhibit was composed of Trumpet and Incomparabilis varieties of which Quartz, Blizzard and Tenedos were especially good.

The best twelve Trumpet Daffodils were shown by Mr. Guy L. Wilson, whose yellow varieties included King of North and Honey Boy, and several seedlings. Maharajah, which has a primrose-coloured tube, and the white Beersheba, were also of great merit. In his second-prize collection, Mr. J. L. Richardson included Master Robert, yellow; Rosary, which has a pink tinted rim to the tube, and the bi-color Mrs. Christie Miller.

The Donard Nursery Co. were alone in the class for twelve Incomparabilis varieties, and were awarded the first prize for a good collection of unnamed flowers. Mr. J. L. Richardson was the only exhibitor of twelve Barrii Daffodils, and was awarded the first prize. He showed beautiful blooms of Firetail, Sunstar and Lady Moore. The last-named has a pale primrose perianth and a vivid rim on the corona. The Donard Nursery Co. were awarded the first prize for twelve particularly good Leedsii varieties, which included Silver Plane, Mitylene and White Sentinel.

The competition for Poeticus varieties was very good, and the first prize was won by Mr. F. A. Secrett, with a splendid collection. The varieties Dinton Red, Huon, Red Rim and Papyrus were excellent. Mr. J. L. Richardson had good vases of Inca, Caedmon and Matthew Arnold in his second prize exhibit.

The following classes required six vases each of specified types. Mr. Guy L. Wilson was first with the three types of Trumpet Daffodils. His yellows included Yukon, His Excellency and good seedlings. White Emperor and White Conqueror were good examples of the white Daffodil, while War Cloud and Moira O'Neill were prominent amongst his bi-colors. The Donard Nursery Co. had good vases of Slieve Donard, Gorgeous and Kuntera in their second prize exhibits. Mr. Wilson was also first with Incomparabilis of yellow shades, when he showed Fortune and Bokhara of great beauty. The Donard Nursery Co. were second, with bi-color Incomparabilis varieties. Mr. J. L. Richardson was first with bi-color Barrii, of which he showed very fine blooms of Therapia, Firetail and Sunstar. The Leedsii varieties were not very well represented in this division. There were no small-crowned varieties, but Mr. Guy L. Wilson was awarded the first prize for giant Leedsii. He had a beautiful vase of Suda, which has a white perianth and a large corona shaded with peach-pink at the mouth.

The four classes, each requiring three vases, did not find much favour with exhibitors, but Captain H. G. Hawker, Strode, Ermington, Devon, had especially good blooms of the Poeticus varieties Kingdove, Evadne and Dulcimer in his first-class exhibit.

Section two was devoted to new varieties, and was for open competition. The nine classes included a number of very beautiful blooms. The best collection of twelve varieties, raised by the exhibitor, was shown by Mr. Guy L. Wilson who had particularly good Trumpet seedlings. Mystic, which received an Award of Merit, and Mary Malony, a giant Incomparabilis, which has a white perianth and a long, yellow tube, were also of great merit. In this popular class, Mr. John S. Arkwright, Presteign, was a good second, with excellent seedlings. The Rev. Rollo Meyer, Watton Rectory, Hertford, was first with six varieties, raised by the exhibitor. He had good seedling yellow Trumpet varieties, and Ethel Wightman, a bi-color Trumpet, which has a wide, frilled mouth to the pale yellow tube. Mr. E. T. England, Barnet, was second.

The Rev. G. T. C. Pearce, Faralong, Rook, Wadebridge, Cornwall, was first in the class for three varieties, raised by the exhibitor. He had an excellent bi-color Trumpet, and two good Poeticus seedlings. Mr. E. H. C. Thurston, Chandlers Ford, was second. The class for twelve varieties, not in commerce, was well contested. Mr. J. L. Richardson, who included Brighter London and Hades, two Barrii varieties, with very vivid orange coronas, was first, and Mr. W. Welchman, Birdbeck House, Upwell, Wisbech, who had lovely blooms of Mercia, a Poeticus with a tiny corona, was second.

Mr. F. A. Secrett won the first prize in the class for six varieties, not in commerce. He showed several particularly good varieties, including J. K. Ramsbottom, which received an Award of Merit a week previously, Red Cockade, Ian, Papyrus and Red Rim. The Rev. Rollo Meyer was a good second, and he had good seedling Trumpet and Incomparabilis varieties. Mr. John S. Arkwright, who included in Corgi a giant Incomparabilis of uncommon appearance, was first in the class for three varieties not in commerce.

There were three classes for exhibitors who have never won a first prize for seedling Daffodils at an R.H.S. show, and in these the best three varieties raised by the exhibitor, were shown by Mr. George B. Cope, Ashfield, Albrighton, Wolverhampton, who staged seedling Trumpets. The Rev. G. T. C. Pearce, showing a seedling which has a white perianth and a small pale yellow corona, was first in the class for one variety, raised by the exhibitor, and Mr. F. C. Calvert was first in the class for three varieties not in commerce. He included Irma, a good Tazetta variety, and Bradwardine, a large white Trumpet.

The Market classes, though perhaps not so fully contested as was hoped, were very interesting. There were four classes, each requiring a box of Daffodils packed as for market, and despatched by rail to the R.H.S. Hall. The first prize box of yellow Trumpet Daffodils was sent by the Holbeach Bulb Co., and arrived in perfect condition. The variety was Van Waveren's Giant. Messrs. J. T. White and Sons, Spalding, were first in the class for a box of any Incomparabilis or Barrii variety, with the handsome Lady Diana Manners. There was no exhibit of a box of Leedsii variety, but the Holbeach Bulb Co. were first with a box of the Poeticus variety Horace, which was of first-rate appearance when opened.

Four classes for market bunches of cut blooms were arranged, and all the exhibits were of considerable merit. Each required nine bunches. Mr. E. B. Champernowne, Yelverton, showing Golden Emperor, Race Horse and King of May, was first in the class for yellow Trumpet varieties, and was also first with equally meritorious Poeticus varieties. Messrs. J. T. White and Sons were first in the class for Incomparabilis and, or, Barrii varieties, and with Leedsii varieties. They had the varieties Lady Diana Manners, Croesus and Red Cross, of great merit.

In the open division there were twenty classes each requiring one bloom of a specified type. The competition generally was very good, as also were the exhibits. The Rev. T. Buncombe was first with a Yellow Trumpet. Mr. Guy L. Wilson had the best white Trumpet. Sir C. Cave, Sidbury Manor, Sidmouth, was first with a good Incomparabilis with red colouring, and Messrs. Barr and Sons were equally successful with an Incomparabilis with red colouring. Mr. Arkwright was first with a bi-color Incomparabilis without red colouring, and Mr. Calvert was first with the same section, with red colouring. Mr. J. L. Richardson won first prizes with a Barrii, without red colouring, and a bi-color Barrii. Mr. D. R. Acheson had the best bi-color Barrii without red colouring. The Donard Nursery Co. were first with a giant Leedsii and a Tazetta variety. Mr. Morris was first with a Barrii of yellow shades, a Trumpet-shaped Triandrus and a Poeticus variety. Mrs. A. West was first with a cup-shaped Triandrus, and Captain H. G. Hawker had the best double variety.

In the amateurs' classes, the Rev. J. T. Buncombe, Black Torrington, Devon, won the first prize for six White Trumpets, showing Domino, Wheel of Fortune and Brightling, of very good quality. Mrs. A. West, Bray, Ireland, was a successful exhibitor in these classes. In her first prize six Yellow Trumpet varieties, she included Cleopatra and Lord Roberts, of good form and colouring. Her first prize Barrii varieties, such as Sunstar, Lady Moore and King George, were very beautiful. Her best Giant Leedsii varieties were Crystal, Suda and Kingdom, and in her exhibit of small Leedsii, Alpine Snow and Hypatia were of great merit. Mrs. West was also first in the class for a collection of thirty-six varieties, the cost price of each bulb not to exceed one pound, and in the class for twelve varieties. with a price limit of fifteen shillings per bulb, In each case Mrs. West set up admirable exhibits. Her best varieties were Lady Primrose, Lord Roberts, Cleopatra, Bernardino, Firetail, Dosoris, King George, Harpagon, Kestrel and Inglescombe. Mrs. E. V. Butler, Twining Park, Tewkesbury, was a good second in the larger class, and she had very fine vases of Frantin Latour, Warwick, Sunny Isle and Pandora.

The Rev. J. T. Buncombe had the best collection of twenty-four varieties, costing not more than fifteen shillings per bulb, and he included Will Scarlett, Ruby, Socrates and Cossack, of very good quality. Mr. H. A. Marriner, Little Brampton, Billingshurst, won first prizes in the classes for twenty-four and for twelve varieties, in each case the price limit was five shillings per bulb.

The exhibits of bowls, vases and baskets of Daffodils, in the decorative classes, were set out in the Annexe. Mr. W. Welchman was first with a well arranged vase; Mr. G. Mayer won the first prize with a good bowl of Croesus, and the Donard Nursery Co. were placed first with a handsome basket of mixed Daffodils.

Groups.

Messrs. R. H. Bath, Ltd., arranged an imposing group, well set off by a background of black velvet. A large number of seedlings of merit were included in this exhibit, while features were made of Advance Guard, Pride of the Market, the dainty Phyllida, and Inglescombe; other noteworthy named varieties including Pola Negri, Rubini, Rosalie and Premier.

A striking display was staged by the Donard Nursery Co.; it included fine examples of all the sections, and a number of choice unnamed seedlings. Notable amongst the large trumpet varieties were Gorgeous, Grenadier, Slieve Donard, Beersheba, Magog and Clarion; while there were also outstanding examples of Firetail, Croesus, Queen of Hearts, Mitylene and Glorious.

The tastefully arranged group, staged by Mr. J. L. Richardson, contained many Narcissi of good quality, all in exceptional condition. Master Robert was well represented, as also were Firetail, Corregio, Golden Goblet and Harpagon; there were also good blooms of Mitylene, Leonotes, Seraglio and Suda.

The display of new Daffodils, shown by Mr. Guy L. Wilson, included fine examples of Gold Beater, a large trumpeted variety, with curled perianth segments; the creamy-white Beersheba, Firetail, Nevis, Fortune, an exceptionally showy Incomparabilis, and Tenedos.

Messrs. Cartwright and Goodwin, Ltd., arranged a small group, the most outstanding varieties being Tenedos, Gaya, Miss Willmott and Cleopatra; while that arranged by Mr. G. W. Miller included exceptional blooms of Yellow Poppy, Hope of Holland, Croesus, Whitewell and Betha; also the double Holland's Glory and Primrose Phoenix.

The bank of flowers staged by Messrs. D. Stewart and Sons, with pillars of Horace, the lovely Mrs. E. H. Krelage, Weardale Perfection, Primrose Phoenix, Van Waveren's Giant and Lord Kitchener, included the richly-coloured Dragoon; Cheerfulness, a double Poetaz variety; Red Chief, a dainty Barrii; and Firetail.

The prominent features of the group displayed by The Welsh Bulb Fields Co., were the fan-like arrangements of blooms of Pelican, Owen and Triandrus Leedsii hybrids. There were also good examples of Joker, Gladys Bibby, Nannie Netticoat, Miss Willmott and John Evelyn.

Mr. J. W. Barr staged a fine collection that contained many fine, large trumpeted varieties, such as Mario, Polemon, Louis Mountbatten, La Vestale and Noblesse; while other striking sorts were Salimbo, Torfrida, Red Hussar, Sans Gene, Ixion and Red Eye.

A really magnificent group of Poeticus varieties was staged by Mr. F. A. Secrett. There were masses of Red Rim, Huon, Wide Wing, Narrabri and Dinton Red; while Mandarin, Minnie Weedon, Papyrus and Wide Wing, together with a large number of seedlings, all assisted in the formation of a charming effect, and were only a few from the enormous number shown.

Messrs. Herbert Chapman, Ltd., showed good blooms of Coppice, Milo, White Emperor, Samos, Belvedere and Ettrick, all cream-coloured trumpet Narcissi; while other striking sorts were Frilled Robin, Golden Flag, Minuet, and Taranto.

The exhibit arranged by Messrs. J. R. Pearson and Sons, Ltd., contained a number of large trumpeted varieties, including Tresserve, Van Waveren's Giant and Cleopatra. Marshlight, Orange Sun, Mrs. R. O. Backhouse and Mrs. Barclay were striking features, and there were fine blooms of Croesus, Zillah, Beersheba and Tamerlane.

A small group of choice varieties was shown by Messrs. John Wilson, Ltd.; although most of these were unnamed seedlings, there were several fine named forms, including Herbert Smith, Ladylift, Glad Eye and Medusa.

Mr. Herbert G. Longford staged a small collection, which included good specimens of Flame, Cossack, Macebearer and Whitewell; while in a corner of the hall Messrs. Dobbie and Co. made a feature of Croesus, attractively arranged to give an effect of growing naturally on mossy banks.

W. B. Cranfield, Esq. (gr. Mr. J. Parkinson), staged a magnificent group of numerous varieties. There were fine blooms of Kantara, Grenadier, Sea Craft, Grenade, Suda, Beersheba and Helmet, and other striking sorts were Helen O'Hara, Queen of Hearts, Sunpath, White Sentinel and Sunrise.

P. D. Williams, Esq., staged a choice collection which included some magnificent varieties. There were beautiful blooms of Folly, a bi-color Incomparabilis; Carminowe, Zennor, Jubilant and Mystic, while the unnamed seedlings were all of great charm.

Mr. R. F. Calvert arranged a group in which prominent positions were given to Tenedos, Gallipoli, Ideal and Firetail; other notable sorts were Blizzard, Irma, Croesus, Taranta and Lucinius. The magnificent bank of Narcissi staged by Messrs. Barr and Sons was very imposing, and fine use was made of the varieties Hera, Buttercup, Whitewell, Cassandra, Surprise, Fortune's Queen, a large Incomparabilis and one of the finest in the show; John Evelyn and Duke of Anjou were very striking, as also were Mitylene, Alleyne, Agatha, Silver Gift and Ghandi. There were also fine blooms of Josephine Gandry, Moonbeam, Arion, Red Cross and Orb, to mention only a few.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

The monthly meeting of this Society was held in the R.H.S. Hall, on Tuesday, April 10. Mr. T. R. Butler presided.

Six new members were elected, and the sum of £46 4s. 9d was withdrawn by members over the age of sixty years, and £10 17s. 7d. was passed for payment to the nominee of one deceased member. The Sick-pay on the Ordinary Side amounted to £131 14s. 11d., and on the State Section to £91 12s. 6d., while maternity claims came to £9 10s. 0d. The nominee of one deceased member left the sum of £29 16s. 9d. to be placed to the Distress Fund in remembrance of her husband. Grants amounting to £52 8s. 6d. were made to sixteen insured members towards dental and optical treatment, and twenty-one further cases were considered.

The Secretary reported that all Balance Sheets had been sent out to members, and that a few still remained which will be sent to non-members on application.

LINCOLNSHIRE DAFFODIL.

The twenty-fourth annual exhibition of the Lincolnshire Daffodil Society was held on April 13 in Spilsby Drill Hall. This being the only show of the kind in the county, flower lovers came from a wide area and the opening ceremony was performed by Lady Montgomery-Massingberd, of Gunby Hall.

The entries numbered one-hundred-and-eighty, being thirty in excess of last year. Mr. Mallender, of Scrooby, Notts., was the judge for the Daffodils and Major Conway Gordon for herbaceous flowers. Lord Fermoy's Silver Cup, for a collection of thirty Daffodils, representative of the important divisions was won for the second year in succession (and thus outright) by the Spalding Bulb Company. They also displayed a wonderful Incomparabilis seedling, which attracted great attention. It is as yet unnamed, and has a red cup, the beautiful overlapping segments being white.

The chief prize-winners in the open classes were:—Rev. G. H. Harries, Burgh; Mrs. L. C. Thompson, Aswardby Hall; Mrs. H. Dunkley, Wainfleet; B. Robinson, Hundleby; S. R. Knowles, Hundleby; N. S. Robinson, W. Hickman, Halton, and Colonel C. A. Swan, Sausthorpe Hall.

In the class for amateurs, successes were scored by Mrs. C. Capes, Burgh; Mrs. W. Rawnsley, Well Vale Hall; Rev. H. G. Alington, Candlesby; Mr. B. Robinson, Mr. H. Dunkley, Mrs. Caudwell, Mr. N. S. Robinson and Mr. F. L. Stephenson.

The chief prizes for herbaceous flowers were awarded to Mrs. L. C. Thompson, Mrs. A. M. Robinson and Mrs. Caudwell, while the first prize in the clever table decoration class was won by Mrs. G. Laming, Spilsby; second, Mrs. L. C. Thompson, Aswardby Hall; and third, Mrs. W. Rawnsley, Well Vale Hall.

Obituary.

John Proctor.—The older generation of Scottish gardeners will learn with regret of the death of Mr. John Proctor, of Aberdeen, one of the best-known professional gardeners in the north of Scotland. Born near Kirriemuir, Forfarshire, in 1844, he began his career as a youth in the gardens at Inoschewan and Belnaboth, situated near his home. He gained further experience at Craigo Gardens, near Montrose, and then at Viewfield, where he received valuable insight into the culture of Orchids. His first appointment as head gardener was with Captain Carnegie, at Kinblethmont, near Arbroath, where he remained five years. Mr. Proctor held similar positions at Straloch, Slain's Castle, and Devanha, Aberdeen. He remained at the latter establishment for twenty years, until the death of his employer, when the house and grounds were taken over by a building syndicate. Mr. Proctor was loath to leave his old surroundings, and he rented on his own behalf his favourite part of the gardens called the Mound, whereon he built a house and named it "The Mound." On the land surrounding his house, Mr. Proctor started as a florist and market gardener. This new venture proved successful, and until about two months ago Mr. Proctor, despite his eighty-four years, was able to supervise his garden and greenhouses. Mr. Proctor had won many trophies, cups and medals at horticultural shows, and was a frequent exhibitor at the annual shows of the Royal Horticultural Society of Aberdeen. His services as a judge were much in request, and he officiated many times in that capacity at the leading shows in Edinburgh, Glasgow, Dundee and Aberdeen.

ANSWERS TO CORRESPONDENTS.

Gardener's Notice.—*E. O.* Subject to any local custom or agreement to the contrary, you are entitled as Head Gardener to one month's notice.

Names of Plants.—*Mr. W.* One of the many hybrids of Primula Juliae known as P. Wanda.—*Mrs. M. J. W.* Triteliaea uniflora.

Peach Trees Failing.—*J. D.* The treatment given your Peaches in regard to top-dressings of bone-meal and lime is quite correct, but there must be some neglect of watering or other cultural details for such varieties as Hales' Early and Dymond to drop all their fruits, as these are both good, hardy varieties and prolific croppers. It rather suggests that the trees were allowed to become too dry at the roots early last autumn, but the details you give us are not sufficient to form a correct opinion as to the real cause of failure. Four times is not enough to go over the trees with a rabbit's tail; this should be used daily for at least a week or ten days, as so much depends on the condition of the trees and the weather.

Propagation of Rhododendrons and Azaleas.—*A. H. G.* The ordinary hardy evergreen Rhododendrons may be propagated by means of layers, which usually take two years before they are well-rooted and fit to lift, but the most common method is by grafting, this work being done early in the year in a close propagating case indoors. Saddle- or side-grafting on to seedling stocks of R. ponticum is the method employed. Hardy Azaleas are usually grafted on to seedling stocks of R. flavum, which was at one time known as Azalea pontica, the work being done indoors during the spring. Many of them may also be increased by means of cuttings, using for this purpose the young, half-ripened shoots, which are generally in the right condition towards the end of July. The cuttings should be about three inches in length; they should be inserted in pots or pans of sandy soil, in a close case of a cool house, or they should be placed out-of-doors in a shady place, under bell-glasses. They may also be raised from seeds. The so-called Indian and greenhouse Azaleas, also many greenhouse Rhododendrons, may be increased by means of cuttings of half-ripened shoots in a compost of sandy peat, standing the pots or pans in a slightly heated case. The Indian Azaleas, of which large quantities are imported every year from Belgium, are all grafted on to young stocks of strong-growing varieties.

Stopping Chrysanthemums.—*W. P.* The following are the times at which to stop your Chrysanthemums and also the buds that should be secured: Mrs. D. H. Thornton, end of April, first crown bud; Admiral Beard, middle of April, second crown bud; Mrs. M. Malvin, does not require stopping, it produces natural crown bud; Major Dalgetty, mid-May, first crown bud; Mrs. F. Fairs, mid-May, first crown bud; and Mrs. Ashcroft, mid-April, second crown bud.

Communications Received.—H. H. A.—W. K.—C. H. L.—C. L.—Constant Reader.—H. G. Y.—R. R.—W. J. W.—C. H.—G. H. D.—L. S. A.—W. A.—G. F. G.—G. W. S.—A. B.—J. C.—S. B.

THE
Gardeners' Chronicle
No. 2157.—SATURDAY, APRIL 28, 1928.

CONTENTS.

Allotment management 290
Books, notices of—
  Flowering Plants of South Africa ... 289
  The Dahlia Year Book 289
  William Bateson, Naturalist ... 290
Botanist, memorial to a 290
Carnations, new ... 289
Dagenham, open spaces for 290
Flower garden—
  Balsams for bedding 295
  Cynoglossum grande 295
Fruit plantations, tour of 291
Fruit trees, canker in... 300
Fruits, cold storage of 290
"Gardeners' Chronicle" seventy-five years ago 291
Garden notes from south-west Scotland 295
Ghent Quinquennial Exhibition 297
Greenhouses on private estates, the rating of 300
Hardy flower border—
  Anchusa myosotidiflora 295
Ice Saints, the ... 291
Indoor plants—
  Aotus gracillima ... 294
  Leonotis Leonurus... 294
  Tabernaemontana coronaria ... 294
Iris Society, the American 291
Jolis, Mr. H. 290
Lincoln's Inn Garden 289
Narcissus flies, some personal observations on 301
Obituary—
  Lucas, C. J. ... 305
  Mason, H. T. ... 305
  Reader, F. 305
Plant industries of Corsica 296
Rose, pruning an old standard 300
Roses, faked 290
Slug, the garden ... 300
Societies—
  British Mycological 304
  National Rose ... 301
  National Auricula and Primula ... 304
  Norfolk and Norwich Horticultural 304
  Orchid Club 305
  Royal Horticultural 303
Tambourissa quadrifida 294
Trees and shrubs—
  Castanopsis chrysophylla 294
  Cistus Loreti ... 294
  Magnolia parviflora 294
Week's work, the ... 292

ILLUSTRATIONS.

Balsams in Regent's Park, London 295
Ghent Exhibition: views of 297, 299
Jolis, Mr. H., portrait of 290
Narcissus Mystic 291
Reader, Frank, portrait of the late 305
Rose May Wettern 301
Tambourissa quadrifida, fruits of 293

Average Mean Temperature for the ensuing week deduced from observations during the last fifty years at Greenwich, 49.7°.

Actual Temperature.—*The Gardeners' Chronicle* Office, 5, Tavistock Street, Covent Garden, London, Wednesday, April 25, 10 a.m. Bar. 31.0. Temp. 59°. Weather, Fine.

William Bateson, Naturalist.[*]

William Bateson died at Merton on February 8, 1926, in the fulness of his powers and on the threshold of his sixty-fifth year. No biologist of his time has made a deeper and more lasting impression, either on biological science or on his contemporaries. Great as are the services which he rendered to biology, it seems, at least to one of his associates, that the services he rendered to mankind are even greater. It is true that the specialised nature of the work to which Bateson devoted his life restricted the number of people with whom he came in contact; but, on the other hand, it is certain that of those who did meet him, no matter the walk of life to which they belonged, not one escaped or sought to escape the strong and chastening influence of Bateson's personality. It has been said with as much truth as may be conveyed by paradox that "you can only teach what you do not try to impart." The great things which Bateson taught all unconsciously were love of truth, devotion to work, and a contempt for all things that are petty. It is a high tribute to aver, without fear of gainsaying, that Bateson made these hard things less impossible by his example. Those who knew him and who prize his memory will be grateful to Mrs. Bateson for the memoir from her pen which is prefixed to the volume of Essays and Addresses just published by the Cambridge University Press. The memoir is not a final biography, but simply what it claims to be, "A short account of his Life." How it will appeal to the newer generation we have no means of judging, but that it will be received with sincere gratitude by those of his contemporaries who knew him we have no doubt. In reading it they cannot but feel not only that the man they knew and venerated lives again before them, but also that the life which is revealed to them in these pages is greater even than they had judged it to be when they met and talked with him. For in truth men who have greatness in them must always have also some measure of reserve. No more than their heart do they wear their heads on their sleeve. They so often commune with themselves that they must at times seem to be somewhat aloof to all but their most intimate and constant companions, and therefore it is only from one of the latter that we may hope ultimately for the finished picture of the man. The excellence of the sketch sustains that hope. Mrs. Bateson has shown in this memoir that she has all the qualities of the biographer. Intentness on her subject, so complete that the writer is forgotten in the subject, and candour so sincere as to make superfluous any critical posturing on the part of the writer. Metchnikoff once wrote a book on *La Disharmonie de la Vie* and surely if disharmony there be, it will be manifest in the life of a man who seeks to discover new truths and to break away from established traditions. To these tasks Bateson's life was devoted. He found zoology conventionalised. Darwinism had become an accepted dogma, a subject of discussion rather than of research; and the problem of the mode whereby evolution had come about was already being shelved and ignored. Therefore Bateson took a way of his own and that way led him along solitary paths. He wanted to find out how evolution has proceeded—how species have originated, and so, after a few trial flights at research along accepted lines, he set himself the stupendous task of studying and classifying the variations which are to be met with here and now among living things. As the outcome of that work, which lasted many years, Bateson produced his now famous book, *Material for the Study of Variation*—a book illuminated by one of the most brilliant introductions ever prefaced to a scientific work. Then, later, having become engrossed in what would now be called Genetics—a term which he himself coined—he learned of Mendel's work. It was the clue which he had been seeking all his life. It enlightened his own discoveries with respect to the discontinuity of variation and showed that the prevailing ideal of the summing up of well-nigh imperceptible variations may be dismissed. Henceforth, his life was devoted to the pursuit of the new science which seeks to discover the laws of heredity. Many and brilliant were the contributions which he made to this science, but the greatest contribution of all was to convince biologists and the world at large that this new science is of overwhelming importance, both to biology and to mankind. There will be other opportunities when detached references may be made in these pages to the subjects treated of in these Essays and Addresses, but on this occasion we confine ourselves to stating what seems to us to be the greatest of Bateson's many contributions to science and in recommending this record of his life to all our readers. There are all too few great biographies of men of science. The life of Charles Darwin is one. We hope that to this restricted number there may soon be added a biography of William Bateson, and, moreover, that it may come to us from the pen of the writer of this "Short account of Bateson's life."

Lincoln's Inn Garden..—A small building in New Square, Lincoln's Inn, has for many years hidden from view the secluded site of what was once the kitchen garden, which provided the domestic supply of vegetables when the Inn was the common residence of barristers and students. The building which has obscured from view this garden is fast being demolished, and as vegetables are no longer required from this source the Benchers have wisely decided to convert it into a shrubbery and flower garden. It will be marked off by low railings from New Square, and will form an added attraction to this famous old Inn.

Flowering Plants of South Africa.—No. 28, Vol. VII of *The Flowering Plants of South Africa* deals solely with members of the great Natural Order Ficoidaceae. It commences with Mesembryanthemum octonarium (t. 271), a striking plant with flowers about two-and-a-half inches across, and brilliant rose-purple in colour, which open for several days in succession. Mesembryanthemum dissitum (t. 272) may hardly be termed beautiful, for, judging from the figure, its habit of growth is not attractive and the flowers are yellow with a suggestion of green embodied. Juttadinteria proxima (t. 273) is a quaint species of compact habit and a distinct Rhubarb scent; the flowers, which are rose-pink in colour, open about 6 p.m. and close about 10 p.m., the older ones keeping open until midnight. They are sweetly-scented. Mitrophyllum mitratum (t. 274) has flowers very similar to those of Mesembryanthemum proximum, but their fruits differ considerably; the blooms possess a delicate fruit odour and are pure white in colour. One of the dwarfs of the Order is Frithia pulchra (t. 275), for it seldom reaches much more than an inch in height. In its native country it flowers during December, January and February, producing almost sessile deep rose-pink blooms, that are large in comparison to the size of the plant. Disphyma crassifolium (t. 276) is of spreading habit, with leafy, prostrate branches, on which are borne flowers which vary from white to bright rose-pink in colour. Ruschia cymbifolia (t. 277), is a sparsely-branched, spreading and semi-erect little succulent, that produces quantities of small, solitary, purple-rose flowers. Appended to the description of R. cymbifolia is one of R. orientalis. Delosperma pergamentaceum (t. 278) is a fleshy-leaved, dwarf subject, from the Cape Province; its solitary blooms are white, tinged with pink. A most attractive plant is Mesembryanthemum tinctum (t. 279); it is moderately dwarf, with leaves of two forms and bright, rose-purple flowers. Psammophora Pillansii and P. modesta are both figured (t. 280), for they are closely allied. M. Pillansii has larger and ternate, pale-rose flowers.

New Carnations.—The following new Carnations have been registered by the British Carnation Society:—Betty, a shell-pink variety, in colour near to Lady Northcliffe, raised by Messrs. C. Engelmann, Ltd., Saffron Walden; Rosette, the colour of which is given as old rose, raised by Mr. J. W. Philips, St. Albans; and Mrs. Falkner, which has rose-pink flowers, shading to salmon, and was also raised by Mr. J. W. Philips.

The Dahlia Year Book.—Much useful knowledge may be gleaned from the recently published *Dahlia Year Book*, issued by the National Dahlia Society, for it contains several highly instructive articles by competent Dahlia authorities. "How I grow Cactus Dahlias" is a contribution by Mr. W. G. Cramp; Mr. H. J. Jones, V.M.H., deals with the Dahlia as a cut flower; Mrs. C. A. Tisdall describes the use of the Dahlia for indoor decoration; and Mr. J. Emberson deals with it as a cut flower for market purposes. "How to Cut the Dahlia" is the subject of a short but very useful article and the notes on Dahlia Novelties of 1927 should prove helpful to would-be growers of this subject, the popularity of which has increased with such rapidity during recent years. The high place that the Dahlia occupies abroad is demonstrated by such articles as "Dahlias in British Columbia"; "Dahlias at Christmas in India"; and the two which deal with the experiences of growers in South Africa. The frontispiece is a photograph of Mr. J. T. West, J.P., and this is accompanied by an appreciation, for Mr. West is one of the oldest members of the Society, Vice-President, and a member of the Committee. Mr. R. Findlay, Keeper of the R.H.S. Gardens, describes the Dahlias, in their various classes, which received awards after trial at Wisley in 1927; the descriptions are very lucid and form a useful guide for a selection of Dahlias for all purposes. The Dahlias selected for trial in 1928 are ably dealt with and described by Mr. D. B. Crane. This publication should appeal to all Dahlia enthusiasts, and it is available to non-members of the Society at the price of three shillings.

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[*] *William Bateson, F.R.S., Naturalist. His Essays and Addresses, together with a Short Account of his Life*, by Beatrice Bateson. Cambridge University Press, 1928. 21/- net.

Open Spaces for Dagenham.—The Dagenham Urban District Council hope to acquire several large areas of land, one of about one-hundred-and-forty acres that includes the Eastbrook Farm, another of about forty acres, known as The Leys, and one of about thirty-three acres, lying between Park Lane and West Road. The population of Dagenham has increased amazingly during recent years, and the whole district has become congested, so that prompt action is considered necessary to secure suitable land for recreation purposes. To enable the purchase of these lands the Council have decided to promote a "late" private Bill in the present session of Parliament, and Mr. C. A. N. Rhys, M.P., for Romford, in which parliamentary division Dagenham is included, is taking an active interest in the progress of the Bill. Large parts of these spaces will probably be laid out for football, cricket and other games, and at Eastbrook Farm an area not exceeding ten acres will be set aside for the erection of public offices and a depôt. If the Council successfully achieve their objective there will be adequate parks and playing fields within easy reach of all the inhabitants of the district.

Faked Roses.—A reporter to the *Daily Mail* recently described how healthy looking Rose trees that were merely Briars cut direct from hedgerows were being sold from door to door at prices ranging up to four shillings and sixpence a dozen. He stated that in a country lane near Rickmansworth, Hertfordshire, he saw a man and a youth digging the Briars from the hedgerow, and a woman and girl sat with what appeared to be a large bundle of Rose trees between them. The women were packing mould around the roots, tying them in half-dozens, and attaching labels to them that bore meaningless scrawls. Upon speaking to them, the reporter discovered that they were a family, and the man showed no hesitation in telling him that the Briars were sold from door to door as Rose trees, and said that a lot of people were now "at the game."

Viola and Pansy Show.—We have recently received the schedule for the second annual show of the London and South of England Viola and Pansy Society, to be held at the Horticultural Hall, Westminster, on July 3. This Society was formed in 1926, and although the membership at present is small it is hoped that the number will be increased considerably during the present year; the minimum subscription is two shillings and sixpence per annum. The schedule includes classes for exhibition and bedding Violas, fancy Pansies, and Violettas, open to all comers, trade members and amateur members, respectively. The schedule, together with any information about the Society, may be obtained from the Hon. Secretary, Mr. John H. Little, Brent Tor, Brentwood Road, Romford, Essex.

Memorial to a Botanist.—On April 14, the Rev. F. G. Ellerton, Vicar of Tardebigge and Rural Dean, unveiled and dedicated a marble tablet in the chancel of Bromsgrove Parish Church, to commemorate the late Mr. Benjamin Maund, the botanist. Mr. Maund was the author of the *Botanic Garden*, an illustrated monthly publication first issued in 1825; with it were also issued, in parts, *The Floral Register*, *The Fruitist*, and a dictionary of English and Latin botanical terms, by J. S. Henshaw. This work ran to thirteen volumes and was finished in 1850. Another of his works is *The Botanist*, with descriptions and coloured illustrations of tender and hardy plants. The tablet was presented by Mr. Frederick Baxter.

Mr. H. Jolis.—Although coming from a Dutch family that has no connection whatever with horticulture, Mr. H. Jolis possessed a love of flowers that tempted him to enter the horticultural profession. He spent three years in a horticultural school, and afterwards worked for a year in Mr. Amos Perry's Nursery at Enfield, and one year in a large seed-growing nursery at Erfurt. During the following two years he was employed in various continental establishments, improving his knowledge of plants and of languages. While still very young—about twenty years ago—Mr. Jolis commenced business on his own account with one small flower shop. Now he is Managing Director of Messrs. Anthos and Co. and Messrs. Silvesters, Ltd., the titles under which he controls four flower shops in London and one nursery in the suburbs. The floral decorations in connection with the opening of the Chamber of Horticulture a few years ago, were arranged by Mr. Jolis. He designed and superintended the British Section of the great show held at Antwerp several years ago, acted in a similar capacity at the Ghent Quinquennial Show of 1923, and has designed and arranged the British Section of the present Ghent Exhibition. On behalf of the British Florists' Federation, Mr. Jolis has arranged wonderful groups of Chrysanthemums and Carnations at the Royal Horticultural Society's Hall, Westminster, where his skill has won for him the compliments of those in high places as well as of his colleagues. Mr. Jolis is an Englishman in all but birth, and he has given liberally of his time, skill and money to the demonstration of British horticulture on the continent since the war.

MR. H. JOLIS.

Allotment Management.—Suggestions for the cropping, manuring and cultivation of allotments are given by the Ministry of Agriculture in its Leaflet No. 314. Few allotment-holders obtain a full return from their allotments; there is a surplus of one vegetable or a shortage of another, odd rows of green crops interfere with winter digging, vegetables are planted in unsuitable land, and manures may be incorrectly applied. Part of the plot should be "double dug" each year; cultivation and labour spread over the longest possible period; correct methods of manuring and liming employed; the proper proportion of each vegetable grown, and the proper rotation of crops and manuring followed. These matters are all referred to in the Leaflet. In addition, the Leaflet includes a chart showing an ideal cropping scheme. It is arranged in three sections: the first, a plot-plan, with three divisions on which the rotation is worked, showing where and how the crops might be sown, with distances between the rows, etc.; the second, showing the spring and summer crops, with dates of sowing, planting, and the season of harvest; and the third, showing the same for the autumn and winter cropping. A point of great importance is the proper working of the soil by thorough and deep digging. Deep cultivation exposes the soil to the action of air, rain and frost, making the soil easier to work; it increases the supply of plant food in the soil; it improves the drainage and provides ventilation; it enables the soil to conserve moisture during dry periods; it decreases the number of soil pests by exposing them for destruction by hand or by birds; and it breaks up the subsoil, soil pans or layers of hard, compressed soil which, by interfering with drainage or cultivation, check full fertility. Single copies of this Leaflet may be had free on application to the Ministry's offices.

Cold Storage of Fruits.—A substantial grant from the Food Investigation Committee of the Empire Marketing Board has been received by the authorities of the Cambridge Low Temperature Station. They have decided to establish a cold storage station, under the charge of Dr. Kidd and Dr. West, at the East Malling Research Station, the fruits from the plantations of which will be available for the cold storage plant. The work will be carried on in intimate association with the various investigations affecting the fruit industry that are being conducted at East Malling.

Glasshouses for Aberdeen.—Mr. W. B. Clark, Superintendent of Aberdeen's public parks, has lodged a request to the Links and Parks Committee of Aberdeen Town Council for the provision of new glasshouses at the Duthie Public Park. Mr. Clark points out that the present structures, besides being inconveniently situated, are practically beyond further repair. He also emphasises the fact that the present houses are entirely inadequate to meet the increasing demand for plants for display in the Winter Garden, for bedding and for the floral decorations required on many public occasions. He estimates the cost at £4,100, exclusive of the cost of the necessary excavations and levelling which could be done by the Corporation's own employees. Although a large sum, he considers the expenditure fully justified in consideration of the substantial saving that should accrue in heating, transport and the cost of plants. Utility and economy both commend this much needed improvement. The Links and Parks Committee received Mr. Clark's recommendations very sympathetically, and laid them before a full meeting of the Town Council. That body was also agreeable to the proposal, and Mr. Clark has received instructions to take in tenders and have the work carried out.

Long Ashton Research Station.—On Thursday, May 3, the fruit plantations of the Long Ashton Research Station, Bristol, will be open to visitors from 11 a.m. to 4 p.m. On that day the ciders made during the season 1927-28 will be displayed, and demonstrations of tractors suitable for fruit-growers and market-gardeners, also of clearing ground of tree stumps with the aid of explosives, will be given at intervals throughout the day.

Edinburgh Garden Guild.—The *Journal* of the Edinburgh Royal Botanic Garden Guild (Vol. I, part IV), is full of interesting matter for those members of the Guild who are not now resident at Edinburgh, and for those who still are. A glance through the list of members shows the widespread results of the training afforded at the Edinburgh Botanic Garden, for many of them hold prominent positions in the horticultural community of this country, and others are similarly placed in other lands; Africa, the Federated Malay States, America, Canada, India and the British West Indies all having their quota. The frontispiece is a photograph of the Memorial to the late Sir Isaac Bayley Balfour (reproduced from *The Gardeners' Chronicle*), and a brief article accompanying it does honour to this great scientist, whose work in the interests of horticulture may never be fully estimated. The various activities of the Guild are dealt with in turn, and the essays one on "Essex," and another describing "A Journey by Train in South India," are full of interesting information.

Tour of Fruit Plantations.—We learn that the arrangements are now completed for this year's tour to fruit plantations, organised by the National Farmers' Union. The party, which will stay at the Felix Hotel, will assemble at Felixstowe on May 21, and May 22, 23 and 24 will be spent in visiting fruit plantations, etc., in certain areas of Essex and Suffolk. A booklet, containing the detailed time-table and descriptions of the various places to be visited will be issued to those who intend taking part in the tour, and copies of the preliminary programme may be obtained from the Secretary, National Farmers' Union, 45, Bedford Square, London, W.C. 1. The inclusive charge is £6 15s. 0d., and this is intended to cover all expenses in connection with the tour.

American Iris Society.—At the winter meeting of the Directors of the American Iris Society the following awards were announced for Irises grown under trial at the New York Botanical Garden. Awards of Merit, for new Irises introduced during 1923, to Glee (McKinney), Delight (Sturtevant), Glowing Embers (Sturtevant), and Mildred Presby (Farr). Introduced in 1924, Silver Medal, to Aliquippa (Hall), and Awards of Merit to Soledad (Mohr); Gold Imperial (Sturtevant), and King Karl (Sass). Introduced in 1925, Silver Medal to Chartier (Hall); Awards of Merit to Argynnis (Williamson), Lodestar (Hall), My Lady (McKinney), and Primrose (Sturtevant). The Dykes Medal, offered by the Iris Society of England for the best new variety of 1927, was awarded to San Francisco (Mohr-Mitchell). It has been decided that the Farr Memorial shall take the form of a Travelling Library of Iris books, and members of the Society and friends of Mr. Farr have been asked to subscribe to a fund to make the library possible. It will be assembled in the summer, and be available to persons in all parts of the United States. Our own Iris Society has appointed a committee on nomenclature to co-operate with the American Iris Society in establishing methods of nomenclature which shall be standard in both Europe and America. We learn that Iris test gardens are now located in New York, Brooklyn, Ithaca and St. Louis, and that there are now about twenty display gardens extending from New Hampshire to Nebraska. Numerous Iris shows will be held throughout the country.

The Ice Saints.—The fêtes of three Saints, known as the Ice Saints, occur in May; those of St. Mamert on May 11, St. Pancrace on May 12 and St. Servais on May 13. So long as weather happenings have been noted, peasants on the continent have dreaded the weather on these days, and no continental gardener will expose half-hardy plants to the open air until they are past. On May 11 there is frequently a frost, followed by a harder one on the 12th, and on St. Servais' day it is still more severe. Moedler and Lhormann, German meteorologists, have proved that these three days are more often than not, colder than those which precede and follow them, and observations in London and Paris and other continental towns have confirmed their statements. In the Pyrenean country the winters in the high valleys are often mild and springlike, but in May the snow falls and there are hard frosts. This weather is called by the peasants, in the Gascon patois, "The Little Dogs of May." An explanation which has been given of such weather in the Merry Month is this:—The icebergs which have drifted from the Polar regions and gradually melted, make the water through which they pass icily cold. By May this water has reached the Gulf of Gascony, and freezes the air there, which passes eastward over the land and gives rise to wintry conditions.

Agricultural Scholarships.—The Ministry of Agriculture and Fisheries invites application for agricultural scholarships from students who propose to take up such posts as agricultural organisers, teachers or lecturers in agriculture. The scholarships are tenable for two years from October, 1928, and the second year will normally be spent abroad. The value of the scholarships will vary according to the scholar's means, but will not exceed £200 per annum whilst the scholar is in this country; extra allowances may be made for travelling and subsistence during periods spent abroad. The number to be awarded will not exceed five, and will depend upon the qualifications of the candidates. Applications will be received up to June 15, 1928, on the prescribed form (A. 189/T.E.), which, together with a copy of the conditions attaching to the scholarships, may be obtained from the Secretary, Ministry of Agriculture and Fisheries, 10, Whitehall Place, London, S.W.1.

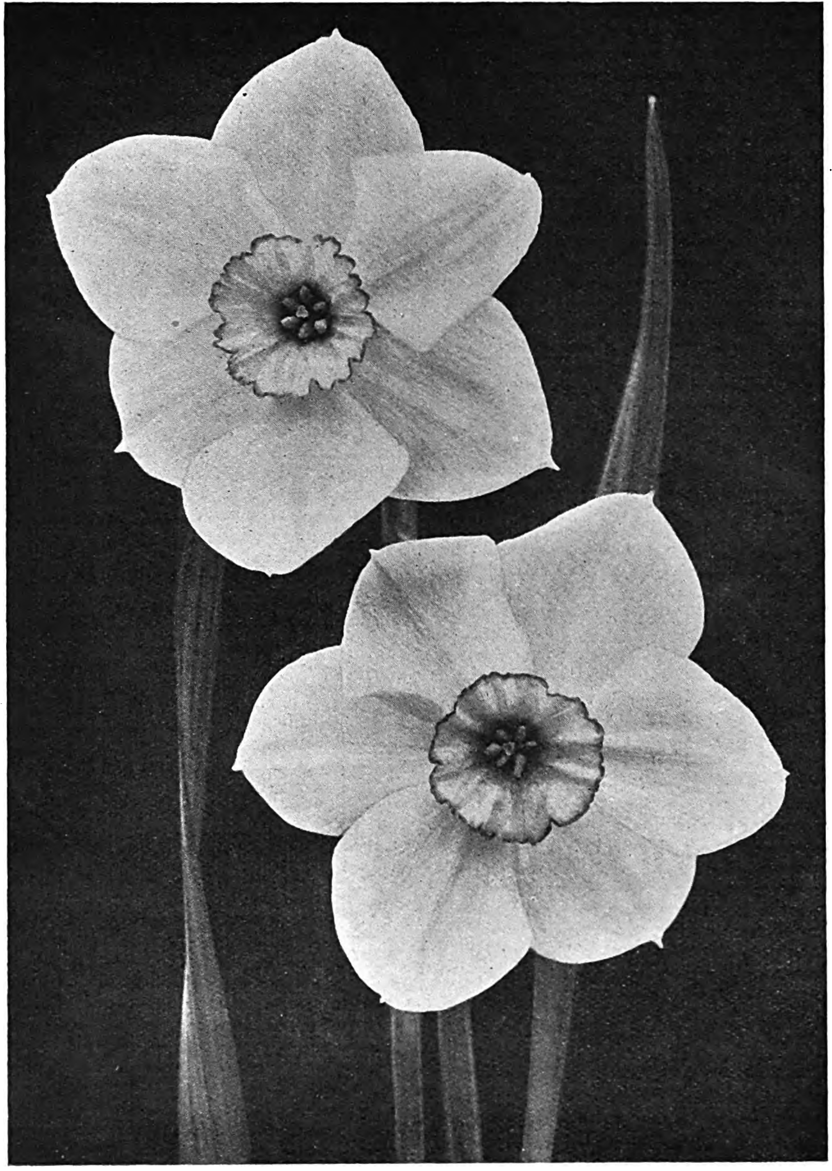

FIG. 140.—NARCISSUS MYSTIC.

R.H.S. Award of Merit, London Daffodil Show, April 17, 1928. Flowers, white; cup, cream-coloured, edged with orange. Shown by Mr. Guy L. Wilson.

(see p. 286.)

Appointments for the Ensuing Week.—Tuesday, May 1: Rhododendron Association's Show (two days); Royal Caledonian Horticultural Society's meeting. Wednesday, May 2: Nottingham and Notts. Chrysanthemum Society's meeting. Thursday, May 3: Linnean Society's meeting. Friday, May 4: National Auricula and Primula Society's Show (Northern Section, two days); Bridport Chrysanthemum Society's meeting; Accrington Chrysanthemum Society's meeting. Saturday, May 5: Blackburn Horticultural Society's meeting and lecture; British Mycological Society's Phytopathological meeting at Cheshunt.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Messrs. Knight & Perry and Mr. Veitch.*—It will have been seen from our advertising columns that the firm of Knight and Perry, in the King's Road, Chelsea, ceases to exist, and is now replaced by Mr. Veitch, junr.; and thus has disappeared one more of the great nurseries, whose names are inseparably connected with the history of gardening. Mr. Joseph Knight, who is said to have amassed a considerable fortune, is the oldest living Fellow of the Horticultural Society, except Sir Charles Monck, having been elected in the year 1808. The removal of Messrs. Veitch's fine plants to the neighbourhood of London is a great gain to the Metropolis, for everyone must have regretted the impossibility of seeing much of so important a collection, so long as it was buried in the heart of Devonshire. *Gard. Chron., April 23, 1853.*

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven Moore, Manchester.

Odontoglossum grande. — This well-known, large-flowered species thrives at the cool end of the intermediate house. Plants that were kept on the dry side since maturing their bulbs are now starting into growth, and repotting may be done, using well-drained pots; Osmunda fibre, with a little Sphagnum-moss added, makes a suitable rooting medium. Water should be given sparingly until the flower scape is showing from the partly-formed bulb, after which a copious supply will be needed as the scape and bulb develop, to be lessened again as the bulb matures. O. Insleayi and O. Schlieperianum should be grown under similar conditions.

Oncidiums for cool conditions.—Many of the largest and robust species of Oncidium, such as O. macranthum, O. superbiens, O. lamelligerum, O. monachicum, and the bigeneric hybrid Oncidioda Cooksoniae, thrive well when grown under similar cultural conditions as Odontoglossums, and are most useful and ornamental for decorative purposes. The flower scapes are now showing on most of these varieties, and the plants should be placed in a light position, and sprayed occasionally to keep thrips and other insect pests in check; protect the spike from slugs by frequently placing a band of cotton-wool around the base. As these scapes grow many feet in length, four neat stakes should be placed at equal distances near the edge of the pot, and the spikes trained around the outside of the stakes, leaving a loose portion at the end. The beautiful and free-flowering O. Marshallianum may be grown along with O. crispum at the cool end of the intermediate house, suspended in a light position near the glass. These Orchids will show signs of deteriorating quickly if the flower spikes are allowed to remain on the plant for a long period. They may be repotted immediately after the scapes have been removed, using well-drained pans and equal parts of Osmunda fibre, well-dried Oak or Beech leaves broken up roughly, and chopped Sphagnum-moss, adding crushed crocks to keep the whole porous. Several species, such as O. concolor, O. cornigerum, O. flexuosum and O. haematochilum are best suspended from the roof, and may be grown at the cool end of the intermediate house, while O. ampliatum requires a more humid position near the glass in a warmer house.

THE KITCHEN GARDEN.

By Allan Falconer, Gardener to the Cheadle Royal Mental Hospital, Cheadle, Cheshire.

Savoys, Cabbages and Cauliflowers.— Seeds of these may now be sown for the maincrop in small batches where they are to remain, thinning the seedlings out gradually and eventually leaving the strongest plants. This method proves more successful in this district than any other. Early Cauliflowers raised in pots may now be planted between rows of Peas, for the sticks used to support the Peas will give some protection from cold winds.

Kohl-Rabi.—Some seeds of Kohl-Rabi may now be sown and the resultant seedlings pricked out eighteen inches apart; while not a very important crop it is a useful substitute for the Turnip, and will withstand dry weather better than the latter.

Chicory and Salsify.—Chicory is a useful addition to salads during winter and early spring, and it requires little attention beyond keeping the surface soil stirred with the Dutch hoe. Sow the seeds in drills one foot apart, in good ground, and thin the seedlings to nine inches. Salsify requires specially prepared ground which has been trenched and deeply manured. Rake the ground surface to a fine tilth, and draw shallow drills fifteen inches apart, sowing the seeds thinly and thinning the seedlings to one inch apart.

Runner Beans.—A sowing may be made in three-and-a-half inch pots, in a frame, for early planting in a warm spot where protection may be afforded. Dwarf Beans may also be sown in the same way, and if ample protection is given they will provide a succession to those grown under glass.

Routine Work.—Continue to sow Lettuce, Endive, Radishes and Turnips at fortnightly intervals to maintain a succession, thinning the plants when necessary, and keeping the hoe going to assist quick growth. Parsley that was pricked out into frames and boxes will now be ready to plant out, six inches or more apart, in the open ground. Aubergines will also be ready for their final potting in well-drained, six- or seven-inch pots, in a compost of light loam, leaf-mould, decayed manure and sand.

PLANTS UNDER GLASS.

By J. Coutts, Assistant Curator, Royal Gardens, Kew.

Moschosma riparium.—This attractive South African plant is very useful for winter flowering in the conservatory; it is propagated easily at this season by means of cuttings which root readily in a close case with slight bottom heat. It grows freely in any good potting compost and in an ordinary greenhouse during the summer months; stop the shoots several times to ensure a bushy habit. Excellent specimens, three feet in height, may be produced in six- or seven-inch pots. In the immediate neighbourhood of London fogs are very apt to injure this plant when it is coming into flower.

Daphne odora.—Although often grafted, this sweet-scented species is quite easily propagated by means of cuttings, which may be rooted during the next few weeks in a close case with slight bottom-heat, or even under a bell-glass in a cool greenhouse. D. odora does not flourish under pot cultivation, and is only seen at its best when planted out in a well-drained bed or border in a cool conservatory. It is fairly hardy and large plants may frequently be seen in the favoured parts of the country growing at the foot of, and trained against, a warm wall.

Mackaya bella.—Propagation of this beautiful greenhouse shrub by means of cuttings may now be carried out. It is a free-growing plant that should be encouraged to make so much growth as possible during the summer, and the shoots should be stopped several times to produce a well-furnished specimen. To induce it to flower freely, somewhat special treatment is required, by keeping it on the dry side during the winter months. It flowers during the spring, the inflorescences being produced at the ends of the shoots; at flowering time, all laterals shoots that may develop just beneath the inflorescences should be removed. Mackaya bella makes a large bush if planted out in a bed in a cool conservatory; it is sometimes referred to as Asystasia bella.

HARDY FRUIT GARDEN.

By T. E. Tomalin, Gardener to the Earl of Bessborough, Stansted Park, Emsworth, Sussex.

Peaches and Nectarines. — When the trees have set their fruits, a start may be made to thin the growths. The object is to eventually leave one good shoot at the base, and one at the top of each fruiting branch; with this end in view, the intermediate growths are gradually removed, the operation being spread over a period of three or four weeks to avoid interrupting the flow of the sap. When disbudding and stopping young growths, it is always best to do the top half of the tree first, for growth is always earliest and usually strongest at the top. By so doing, growth on the lower half will be encouraged. A few days should elapse before the lower half of the tree is attended to. Shoots that extend beyond the top wire may be stopped at the third leaf. The foregoing suggestions apply more particularly to fully-grown trees. In the case of young trees, sufficient well-placed shoots should be left to furnish the wall-space and extend the tree, but on no account should these be overcrowded. If a heavy crop of fruit has set, a small proportion of those unfavourably placed may be removed at disbudding time, but this thinning should be done very sparingly, for a large number of them may fail to develop later on.

Leaf-Curl.—If in spite of spraying and protection from east winds, Peach or Nectarine trees are attacked with Exoascues deformans, all affected leaves should be removed and burned. In bad cases the trees present a very bare appearance after this has been done, and to encourage recovery and the development of fresh healthy foliage, a good dressing of a nitrogenous fertiliser should be applied to the border and watered well in.

Figs.—These suffered rather severely during the past winter; seldom has so much of the previous season's growth been damaged by frost, doubtless owing to the exceptionally severe spell of hard weather that occurred in mid-December last, following so closely on a wet and sunless autumn, when the soft, unripened wood succumbed quickly to the freezing wind which prevailed for several days. All damaged growths should be cut back to sound wood, and when new growth commences, the trees will benefit by an application of an approved fruit tree manure. This will accelerate growth during the early summer, when sunny conditions favour the production of sturdy, well-ripened shoots, which are so essential to the success of out-of-door Figs.

FRUITS UNDER GLASS.

By T. Pateman, Gardener to Sir Charles Nall-Cain, Brocket Hall, Hertfordshire.

Newly-Planted Vines.—If all has gone well with the newly-planted Vines, they should by this date be growing freely. During their early stages of growth great care is necessary with regard to supplying water to the roots, although they should never suffer through lack of moisture. To encourage root action it may be wise to allow the leading shoot to grow unchecked, and so long as it is kept in a healthy condition, roots should be produced freely. Syringe the Vines freely overhead and maintain a moist growing atmosphere; the night temperature should not fall below 65°.

The Cold Orchard House.—In low-lying districts and near large expanses of water, Peach trees are sometimes affected by mildew. This disease, if not prevented in its early stages, may cause a great deal of harm to the young fruits and foliage; the former, if attacked by this fungus, will remain blemished, while if the foliage is infested growth will be checked. To prevent these conditions, the trees should be sprayed with a mildew wash so soon as it may be done safely without injury to the young fruits. The wash is best applied during dull weather, but should this operation have to be done when the weather is bright and sunny, it should be carried out as early in the afternoon as possible, to allow the foliage to dry before the early morning sun gains power, otherwise the foliage is liable to be burned. Watch carefully during dull weather for outbreaks of mildew, and if it appears spray the trees at once.

Early Figs.—Fig trees that were started into growth early in the year should have now passed through their flowering period, and the swelling of the fruits will be apparent. When the second swelling is in progress the roots should be fed liberally with liquid manure, or with a concentrated manure recommended for Figs, to assist the fruits to swell to a good size. Fig trees are generally grown in restricted borders, therefore timely attention is necessary in supplying food and moisture to the roots. Up to this stage frequent syringing and plenty of atmospheric moisture are necessary, but when the fruits are ripening they may be reduced. Keep all the shoots pinched, and remove any weak or crowded growths that are not required for the furnishing of the tree. A night temperature ranging from 60° to 65°, with a slight opening of the top ventilators, will be suitable; the day temperature may be from 70° to 80° on sunny days. By these means the fruits will attain their fullest size and ripen quickly, and the young shoots bearing the second crop will also be advanced.

THE FLOWER GARDEN.

By J. G. Weston, Gardener to the Duke of Devonshire, Chatsworth, Bakewell, Derbyshire.

Violas and Pansies.—Plants that were propagated last autumn in cold frames now require attention, and should be planted out without delay. If the beds allotted to these are still occupied with spring-flowering subjects, the Violas should be planted in the reserve garden, or in boxes, until their permanent quarters are vacant and prepared for them. In the cooler and damper parts of the country, Violas are most reliable and effective for summer bedding, few plants giving better results under good cultivation. The soil should be dug deeply and well-rotted manure worked in, especially if the beds have been previously occupied by Wallflowers, Myosotis, Polyanthuses or similar plants. Violas thrive in a cool, deep soil containing plenty of manure and leaf-mould. In the warmer parts of the country, and more particularly where the soil is thin and shallow, a position should be chosen where they will be shaded from the mid-day sun, otherwise they are not likely to be satisfactory, unless given plenty of water.

The Water Garden.—A general overhauling and cleaning up in the water garden is very necessary at this time of the year, dividing and replanting all strong-growing plants that require it, and to see particularly that these do not encroach on their weaker neighbours. The interest in this phase of gardening has increased during recent years. In many gardens the natural advantages of existing lakes or streams have been utilised, or water has been introduced by artificial means. Those gardens with natural lakes and streams running through them have a decided advantage, but where such do not already exist, much may be done by introducing water and creating Lily ponds in the lower parts of the garden. Where a water garden has not been previously developed, the ground alterations will have been pushed forward during the autumn and winter; the present is a good time to complete all planting operations on the sides of the ponds or streams, bringing them to completion with the planting of the choicer Nymphaeas during the latter part of May. Many plants seem to gain in beauty when flourishing by water, some of the best of these being Hydrangeas in variety, Eulalias, Bamboos, Gyneriums, Cordylines, Gunneras, Phormium tenax, Berberis species, Osmundas and the larger Ferns. Siberian and the larger-flowered Irises, collections of Astilbes, and the many distinct forms of shrubby and herbaceous Spiraeas are all eminently suitable for planting in quantity by the waterside. In planting water gardens, care should be exercised in the arrangements, so that only plants of dwarf or moderate growth are planted on the sides nearest the walks. No two gardens may be treated alike, for each garden should be designed according to its individual characteristics. In association with the Water Lilies, small groups of grasses, and plants of taller growth, such as Richardia africana, for which the water should be of sufficient depth to prevent the roots from being frozen. Hardy Primulas show to advantage in the swampy breadths by the margins of lakes or ponds, and of the grasses that may be used, there are Cyperus longus, Carex pendula, Acorus Calamus and Scirpus lacustris varieties, while there are hosts of other plants that may be used with effect for this purpose.

FOR NORTHERN GARDENERS.

By A. T. Harrison, Gardener at Jordanhill Training Centre, Glasgow.

Cyclamens.—These are now approaching the end of their flowering season, and may be rested gradually by keeping them on the dry side for a few months. They should, however, receive a certain amount of attention, and not be allowed to dry off entirely; excellent results with two-year-old plants may be secured by placing them closely together in a shaded house or frame, and watering them sparingly during the summer months, or until repotting begins towards the end of July. Young seedling plants, which should now be filling their three-inch pots with roots, may be repotted into larger ones, and as in many cases these will be their flowering pots, five-inch ones should be used.

A good open compost of turfy loam, leaf-soil, lime-rubble and sand should be used, to which may be added artificial manure at the rate of a five-inch potful to the barrow load of compost. At this stage it is essential to water the newly-potted plants carefully, and later, when they are well established, they may be grown in shaded frames during the summer months.

Asparagus.—The present month is the most suitable for sowing or planting new Asparagus beds, and where these were prepared early by heavy manuring and deep cultivation, sowing or planting may be speedily accomplished. Where a large quantity of this vegetable is grown it is a good plan to make one or more new beds annually, as in the course of time older beds deteriorate, and may in their turn be dispensed with. On heavy rich land it is not uncommon to find very old Asparagus beds doing well after many years, but in light, hungry soil they do not last so long, and whenever the beds become thin they should be dispensed with. Asparagus raised from seeds should not be cut for use before the third or fourth year from sowing; if the cultivation has been of the best, an abundance of succulent shoots should be produced.

Broccoli.—The present time is very suitable for sowing seeds of winter and spring Broccoli. It may be assumed that the autumn types were sown out-of-doors in March, to form a succession to the latest autumn-sown Cauliflowers, and these again may be succeeded by plants raised from seeds of good varieties sown now. The later varieties, sown at this time last year, are now maturing, and such varieties as Sutton's Late Queen and Methven's June may be expected to carry on the succession until the earliest Cauliflowers are ready. These may be planted immediately from frames or boxes, and should be protected from slugs and other pests, which have a decided liking for the tender green leaves.

Grafting.—Where diseased and useless trees were headed back during winter, they may now be grafted with other kinds which are known to do well in the neighbourhood. A further fresh cut should be made on the old stock, and the selected scions, when prepared, should be inserted so that their inner bark is pressing tightly against the inner bark of the stock at the incision made, and tied securely into position before covering the whole area with grafting wax. In a few weeks' time, when the sap has risen sufficiently to swell up the buds, it will be necessary to cut the ties, and care is required not to dislodge the scions at this stage. By this means many worthless varieties may be superseded, and their places occupied by better and more useful sorts.

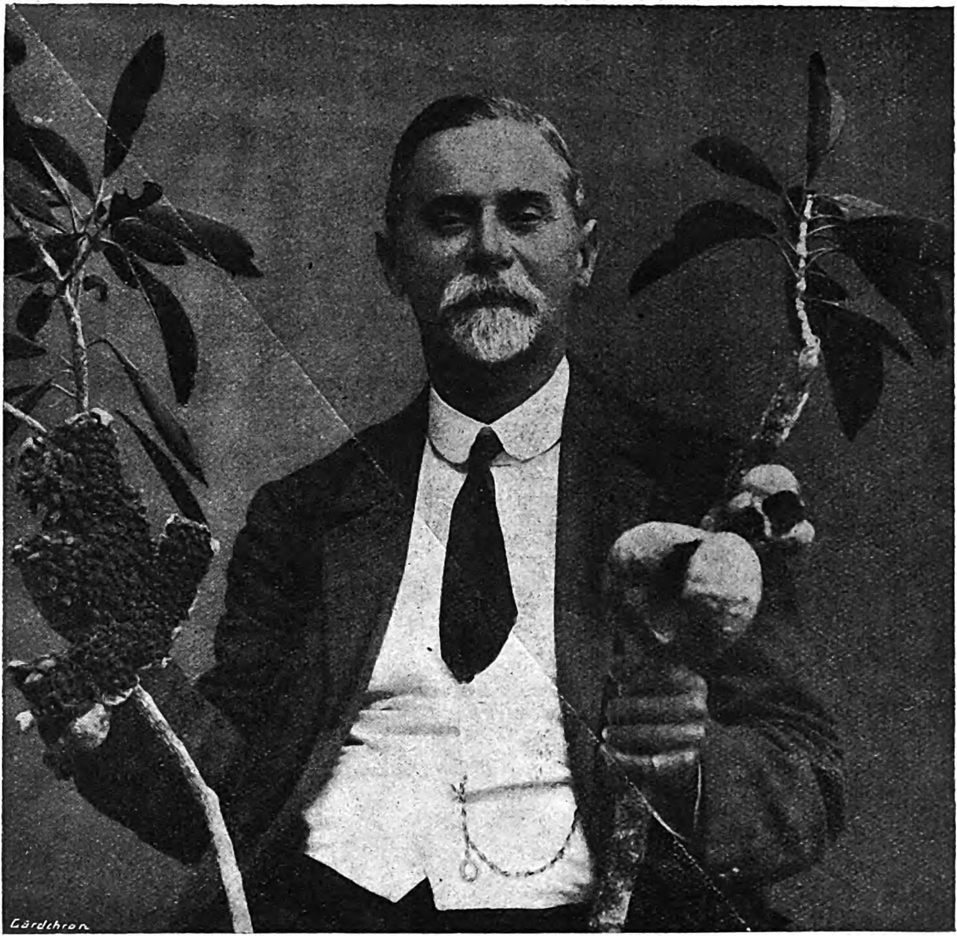

FIG. 141.—MR. F. BIJOUX HOLDING TWO BRANCHES OF THE FRUITS OF TAMBOURISSA QUADRIFIDA.

(see p. 294).

TAMBOURISSA QUADRIFIDA.

The Order of Monimiaceae is represented in Mauritius by two genera only, *i.e.*, Tambourissa and Monimia. Of the former, we have the following seven species, T. tetragona, T. amplifolia, T. Sieberi, T. quadrifida, T. peltata, T. elliptica, and T. pedicellata.

With the exception of Tambourissa quadrifida which produces timber, the other species are but small and useless bushes. Tambourissa quadrifida itself is becoming more and more scarce; it is rare that a tree of considerable height and diameter is found in our forests nowadays. The timber is nearly imputrescible, and was used in 1907 to 1909 at Kanaka Forest in the manufacture of shingles and railway keys, for which products it has first-rate qualities.

Trees that died many years ago were found with the heartwood quite sound, although they had been buried under a heap of humus, and had lost all their sapwood. The accrescent perianth-sac, which is so peculiar, sometimes reaches three inches to twelve inches in breadth, with a hollow cavity one inch to six inches deep, thus forming a sort of receptacle, capable of holding a pint of water for several days, and which the monkeys roaming in the woodland use to quench their thirst.

The propagation of the species is very difficult on account of its natural enemies, namely, rats, bats and monkeys; so soon as seeds do ripen the pericarps open out, as is shown on the right-hand side of the illustration (Fig. 141, p. 293), thus liberating the attractive seeds that are embedded in a red pulp, for the greedy bats. Monkeys eat the whole pericarp in the green state, and rats attack the seeds so soon as they are formed, and before the perianth is open.

It is really a wonderful sight to see a tall tree in blossom; all the branches and even the stem are provided with hundreds of these quaint inflorescences at various parts and in different positions, and the whole looks magnificent. The female flower remains closed permanently, but in the male the perianth splits up into four long lobes, crowded with short, stout, purple filaments, and the ligulate horizontal anther makes it an admirable object of curiosity to study. The leaves are opposite as a rule, and the branches follow the disorderly position that nature seems to have cast over the species. Besides animals, men have also contributed to its rarity by cutting the trees for making drums. The tree is now found to a limited extent, but only in dense, canopied forests. *F. Bijoux, Assistant Director of Forests, Mauritius.*

INDOOR PLANTS.

TABERNAEMONTANA CORONARIA.

The double-flowered form of this fine old plant was, in former days, valued for its fragrance; the plant is hard-wooded, compact and evergreen, with handsome leaves of medium size, and flowers of purest white that are not unlike those of a Gardenia. The perfume is preferred by many to that of the Gardenia, as it is less powerful, and yet a small plant will fill a large house with its exquisite odour.

Sandy peat is a suitable rooting-medium, and the moist atmosphere of a warm house is required by this plant; the flowers are produced during summer, and immediately after flowering, over-luxuriant growths should be removed and a little judicious thinning practised. A partial winter rest in a temperature of 60° is advisable, while for summer, 60° to 65° will be suitable. Cuttings, inserted in the spring, afford a ready means of increase.

The genus commemorates James Theodore Taburnaemontanus, a physician and botanist of Heidelberg, who died in 1590.

T. coronaria was introduced from India, where it is widely cultivated, in 1770, and the double-flowered form of this species is figured in the *Botanical Magazine* (t. 1865), under the name of Nerium coronarium. It is one of those fine old fragrant warm-house plants that still merits attention wherever facilities for its cultivation may exist. *Ralph E. Arnold.*

AOTUS GRACILLIMA.

This beautiful spring-flowering shrub may be propagated at this season of the year by means of cuttings of small, twiggy side-shoots, which root readily in a sandy compost under a bell-glass in a cool greenhouse.

The long, slender growths of this subject are only seen at their best when the plants are grown as standards, and to attain this end the young plants should be stopped once, and two strong shoots of those subsequently produced should be selected and tied to a stake. These should not be stopped until they have attained the desired height, two to three feet being suitable. After flowering, the growths may be pruned back, the subsequent growth being allowed to grow full length without stopping.

Aotus gracillima grows freely in a light, loamy compost to which has been added a little fibrous peat.

LEONOTIS LEONURUS.

This subject, with its tawny, yellow-coloured flowers, is very attractive for conservatory decoration during the autumn. Cuttings root readily in a close case if inserted now, and the subsequent cultivation consists of potting on the plants as they require it, using any good potting compost.

To obtain good specimens of Leonotis Leonurus rather large pots are necessary, eight-inch receptacles being a suitable size for flowering them in. During the summer months they should be stood out-of-doors in an open position, where they will require strict attention as regards watering and syringing, for they are very subject to attacks of red spider. It is very important that the flower buds be well developed before the plants are brought into the house during September, for if the buds are not well advanced the plants are apt to commence growing again, with the result that the flowers are aborted.

PANDANUS VEITCHI.

This species and its variety Sanderae, are popular decorative plants, and may be grown into fine large specimens; it is, however, as small plants for general decorative work that they are most valued. For this purpose they may be propagated by removing the small side-growths with a heel, and inserting them singly in small pots, in a light, sandy compost. If placed in a close case with bottom-heat they will soon root.

Many of the species are too large for general cultivation, but P. graminifolius, P. Candelabrum var. variegatus, P. utulis and P. Baptisti are well deserving of more general cultivation. *J. C.*

TREES AND SHRUBS.

CASTANOPSIS CHRYSOPHYLLA.

This evergreen shrub is not often seen in cultivation, although it is undoubtedly a fine subject, with the added quality of being distinct in character. There are, apparently, very few specimens of moderate size in this country, a fact that is most surprising when we learn that it was introduced from California so long ago as 1844; it is termed the Golden Chestnut on account of its fruits being similar in appearance to those of the Sweet Chestnut—these fruits contain nuts which do not ripen until the second season, when they provide one of the best means of increasing this shrub.

The appellation "golden" is derived from the appearance of the young shoots and under-surfaces of the leaves, which are covered with a golden scurf-like substance which, in combination with the dark, glossy-green of the upper sides of the leaves, imparts to this subject a very handsome appearance.

In California, Castanopsis chrysophylla apparently attains the size of a large tree, sometimes over one hundred feet in height, with a trunk diameter of six feet; but in this country there are few specimens that have passed the bush stage. It grows well in a moderately light loam, in which has been incorporated a good quantity of peat and leaf-mould, while Mr. W. J. Bean, in his book entitled *Trees and Shrubs Hardy in the British Isles*, suggests that one of the secrets of success in cultivating it is never to allow the trunk to become exposed to full sunlight, and that the lower branches should never be removed.

If my memory serves me correctly, there is a good specimen plant of this Castanopsis, fifteen feet or more in height, growing in the large shrub border by the glasshouses at Wisley; it is well sheltered by other trees and shrubs, and is growing, I think, in soil of a medium loamy nature.

It is assuredly a subject well worth acquiring by those who are now furnishing their gardens with choice evergreen shrubs, for it remains attractive throughout the year.

CISTUS LORETI.

The genus Cistus contains many beautiful species, and its value as a group of decorative shrubs cannot be overrated. The flowers of the various members of this family are of several colours, some are pure white; others white with blotches of crimson at the base of each petal; and there are those with either blotched or unblotched purplish-red blooms. None of them may be termed absolutely hardy, for all are liable to be damaged during very severe weather, but they are seldom killed outright, and usually break freely and flower profusely after having been so damaged, for the blooms are produced on the current season's growths. They should all be grown in pots until planted permanently.

Of the white-flowered forms, Cistus Loreti is one of the most striking, for its flowers, produced in terminal clusters of from three to five, are two inches or more across, and have a rich crimson blotch at the base of each petal. Although they are only of a day's duration, the freedom with which they are borne, during June and July, far outweighs the shortness of their existence.

Cistus Loreti is an evergreen, and forms a rounded bush three or four feet high; the young growths are sticky, and the narrow, ovate-lanceolate leaves are dark green on the upper-surfaces and grey beneath. It is of hybrid origin, the parents being Cistus ladaxniferus and C. monspeliensis, and was found growing wild in the south of France and in Algiers.

This Cistus is as hardy as any of the family, of good habit and undoubtedly one of the best. It may be usefully employed either with other Cistuses, or mixed shrubs, for furnishing dry banks and hot, sunny situations; in the mixed shrub border, provided that it has a sunny position, it will hold its own with the majority of shrubs, while it may also be used with effect on large rock gardens. *M. W.*

MAGNOLIA PARVIFLORA.

This species forms a comparatively small shrub, and is one of the most beautiful of the family; the fragrant flowers are white, slightly suffused with rose, almost globular in form, and with a central disc of deep claret-coloured stamens—a lovely and striking contrast. The flowers are produced from May to August.

Although the specimens in cultivation in this country are of comparatively small dimensions, it is quite possible that, eventually, fine examples of M. parviflora may materialise; a note in a contemporary, some seven or eight years ago, records a specimen ten feet high and forty feet round the spread of the branches, and freely-flowered—such a plant would indeed be a glorious spectacle when in bloom.

This deciduous Magnolia is quite hardy and will thrive under similar treatment to that afforded M. conspicua, M. Soulangeana and M. stellata, and like these old favourites, it is fine for conservatory decoration and will submit to gentle forcing. *Ralph E. Arnold.*

HARDY FLOWER BORDER.

ANCHUSA MYOSOTIDIFLORA.

A considerable amount of literature has been written about this subject, both complimentary and otherwise; personally, I am fond of it, and consider that it is well worth a place, either in the herbaceous border or on the rock garden of moderate size. If it can be used in conjunction with Cheiranthus Allionii a really fine effect will be obtained.

It is in flower at the present time, and will continue to be so for a considerable period, after which, if the finished flower stems are cut back, another crop of blooms will be produced later in the season.

Anchusa myosotidiflora is sometimes accused of producing blooms, in size and quantity inadequate to the amount of foliage, but I have always found it to flower profusely, producing every year an abundance of small, brilliant blue blossoms that are well likened to those of the Forget-me-not.

True, the leaves are produced in large numbers, but they are by no means unattractive, being large and heart-shaped, downy and rich green, and borne on long stalks.

Unlike such species as Anchusa italica, this subject cannot be increased from root-cuttings, for the roots are of a more woody texture and hollow, but division is a simple method of increasing it and seeds also provide a ready means.

Possibly the amount of blossom produced by Anchusa myosotidiflora depends, to a large extent, on the conditions under which it is grown. If planted in rich, moist soil in semi-shade, as one often reads it should be, it will most certainly produce rank foliage at the expense of its floral display, but if given a sunny situation and soil of not too rich a nature, the resultant display of blooms will amply repay the cultivator who has wisely refrained from the former practice. *M. W.*

FLOWER GARDEN.

BALSAMS FOR BEDDING.

Impatiens Balsamina, the many beautiful varieties of which are generally known as Balsams, was at one time very popular and largely grown for greenhouse and conservatory decoration, but now it is seldom seen, and then, as a rule, but poorly grown. It is not generally realised that Balsams make excellent summer bedding plants, and a large bed of well-grown specimens is very attractive and gives a good display over a long period (Fig. 142). A few plants with light foliage, if associated with them, add to the general effect and relieve their somewhat formal appearance.

Balsams are quick-growing plants, and require good cultivation if they are to be seen at their best. For out-of-door cultivation they should not be raised too early, for they spoil quickly if allowed to suffer any check, and as they are of a soft, succulent character, they should not be put out until all danger from frost is past.

For bedding purposes the seeds should be sown from the middle to the end of April, in a cool greenhouse. Sow the seeds thinly, for the young plants spoil quickly if at all crowded. Subsequent cultural details consist of potting them on as they require it, placing the plants low down in the pots, for they throw out fresh roots from the fleshy stems. The planting site should be well prepared and enriched with plenty of well-decayed manure, and the plants should be hardened-off and planted out when all danger of frost is past; during spells of dry weather they should be kept watered.

It is important to get a good strain of seeds from a reliable source, for no amount of cultivation will improve a poor strain. *J. C.*

CYNOGLOSSUM GRANDE.

Of the seventy or so species that comprise this genus, there are few worthy of cultivation, and the species most in evidence at present is C. amabile, a somewhat coarse biennial plant, but having lovely blue flowers.

C. grande is a perennial with long, fleshy roots, that may be cut up for increase like those of other members of this Order. It was first collected by Douglas somewhere in western Oregon, or Washington, but it is not included in the list of plants introduced to cultivation by that famous explorer. In the Oregon woods it forms a handsome bush, two feet in height, with large, ovate leaves, five to seven inches long, and a cluster of many flowers carried on long stalks.

The few plants here are the only specimens I have seen; their roots were so small when received that they were planted in pots, as it was not expected they would produce flowers the first year, but most of the plants are now sending up one, or more, flowering stems, and sufficient has been seen to show that this is a welcome addition to the list of blue-flowered border plants.

The flower buds are pinkish, but open a lovely pale violet-blue, each bloom being about half-an-inch in diameter. At the top of the corolla tube, closing it, and concealing the yellow anthers, are five white appendages which make the whole flower head very conspicuous and beautiful.

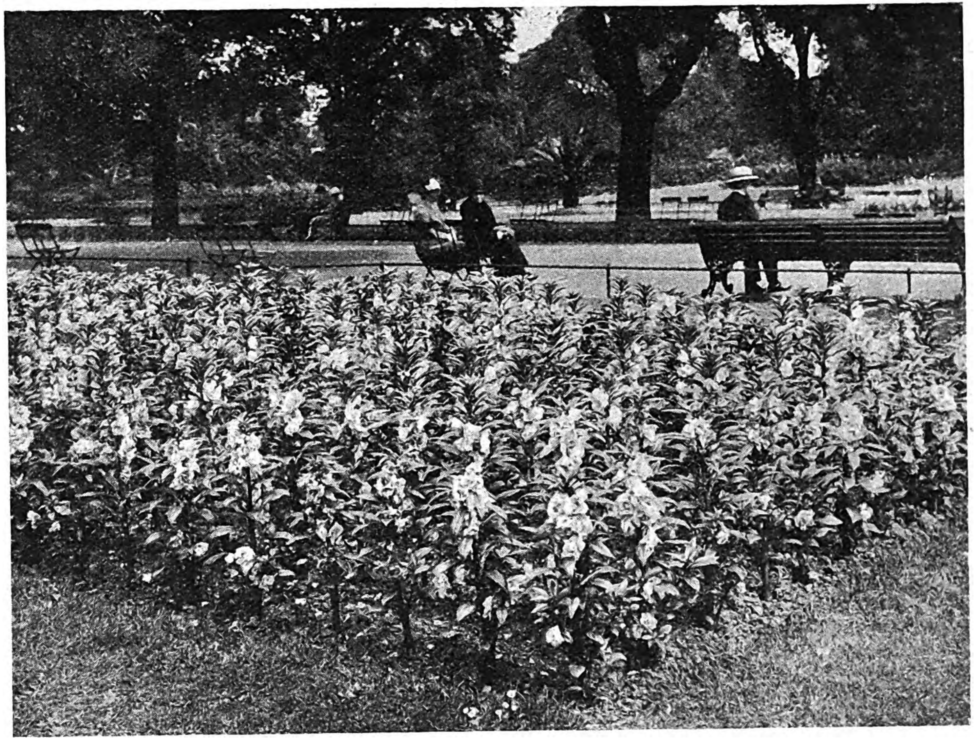

FIG. 142.—BALSAMS IN REGENT'S PARK, LONDON.

It is to be hoped this will prove an easy, happy plant in cultivation and increase rapidly. *T. Hay.*

GARDEN NOTES FROM SOUTH-WEST SCOTLAND.

The Queen of Spain Daffodil, Narcissus Johnstoni, seems in some danger of being lost amid the myriad forms into which florists have translated the genus, and one does not meet with it so often as would be the case were its merit known more widely. Reputed to be a natural hybrid between N. bicolor and N. triandrus, originating in the hills of Portugal, it comes into flower just when the common N. Pseudo-Narcissus is past its best, and always commands admiration for the profusion and graceful poise of its soft, lemon-yellow flowers. It increases very rapidly from bulblets freely produced, but to have it in perfection it should be planted apart from other Daffodils, in a woodland glade or waterside dell.

Few people make sufficient use of bulbous plants, other than Narcissi and Snowdrops, for naturalising. The Squills and their near relatives, Scillas, are rabbit-proof, and never give such charming effects as when established in an open wood or grassy bank. On ground whereof our native wild Hyacinth or Bluebell has taken possession, there is no room for anything else, and no need for anything, but Chionodoxas and most of the Squills are past before the wild Hyacinth spreads its blue carpet and are at their best towards the close of the Crocus season. Chionodoxa Luciliae and its varietal form known as "gigantea" (preposterous epithet for a plant six inches high!) form close colonies where no mowing machine disturbs them, although C. L. gigantea may not be so effective until its second or third year. Scilla Lilio-hyacinthus is distinguished among the genus by its high stature, broad leaves of light, shining green and conical scapes of pale lavender-blue flowers. Even our native Scilla verna, usually seen crouching on the close, windswept turf of sea-cliffs, rises to a height of eight inches in sheltered positions.

The warmth and wet of the current April have brought out a most satisfactory display upon those species of Rhododendron whose young growths escaped destruction by the cruel frost late in December last. The superiority in our wayward climate of those species which flower before starting fresh growth was never more manifest than it is at present. Take, for instance, the sub-series Davidii of the Fortunei group. Last year the young shoots of R. Davidii were four or five inches long when the bitter snap at the end of April destroyed them, and now there is not a single flower on that species; whereas R. Fargesii, of the same sub-series, having delayed its growth until all danger of frost was past, has well nigh hidden all its leaves with beautiful flesh-pink bells and carmine buds.

Again, of the Arboreum series at Castle Kennedy is a specimen of R. niveum, some eighteen feet high with every branch loaded with purple trusses, which demands much admiration. This species is a late starter, whereas R. argyrophyllum, in sub-series Adenopodum of the same series, has never given me a single flower, because its young growths, fatally precocious, have invariably hitherto been frosted. *Herbert Maxwell, Monreith.*

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PLANT INDUSTRIES OF CORSICA.

I.—Fruits of Many Kinds.

In a former article* it was shown that although general horticulture is not easy in a country like Corsica, rock and landscape gardening might be developed to a high degree of perfection. I propose now to show that there are a number of plant industries in the island, some on a small and others on a more extensive scale. It will be convenient to classify these industries, taking first the fruits, then the shrubs, and finally the forest trees and their products. The fruits and nuts which are cultivated in Corsica, either for home consumption or for exportation, are somewhat numerous, and include Oranges, Olives, Figs, Loquats, Bananas, Guavas, Grapes, Apples, Cherries, Chestnuts, Walnuts and others.

Let us begin with the Orange, which may be found in fruit all the year round. At Pino and elsewhere I saw trees laden with ripe and ripening fruits at the end of April, and this in spite of the fact that there had been very heavy falls of snow some weeks previously, doing immense damage to forests and vegetation. One is familiar with the fruits of Ajaccio, both because they are imported into England and because travellers and writers frequently allude to them. A short distance from the city is the Chalet of Barbicaja, which possesses a splendid garden some three to four hundred metres high up on the flanks of the mountain. Here are grown, among other fruits, some widely renowned Mandarin and blood Oranges which are greatly sought after. They are specially mentioned by A. Daudet in his delightful *Lettres de Mon Moulin*. In the chapter devoted to Oranges he tells us that among his happiest memories are those which relate to Barbicaglia (for so the name is written there), where he was wont to take his siesta during the heat of the day. The trees grow to a greater height and cover a larger space than do those of Blidah, the famous Orange town of Algeria. As he lay beneath them they poured out their fragrance to the air, while from time to time a ripe fruit fell beside him, so that he had only to stretch out his hand to secure it. "C'étaient des fruits superbes, d'unrouge pourpre à l'intérieur. Ils me paraissaient éxquis! Ah! qu' on était bien pour dormir dans le jardin de Barbicaglia!"

At Mandriolo also, which is only a few kilometres north of Ajaccio on the road to Corte, one finds some famous Orangeries.* But they are not limited to the south, for many Oranges are exported annually from Bastia and elsewhere. The most delicious marmalade I ever tasted was served for breakfast one morning in April in the very heart of the island, fresh made from the ripe and juicy fruits. While home-grown Oranges may be supplied to the visitor at the hotels in various parts of the island, he should not expect to find the best reserved for his use, and tourists are often disappointed with what is set before them.

Figs grow well on the island but do not appear to be largely cultivated at present for export. The sort which finds favour in the western parts is that known as the Barberry Fig. I saw them, chiefly around Cargèse, where the plants are sometimes used for hedges. The fruits are sent to Vico and Ajaccio, but if the markets are not large enough for the supply the surplus Figs are used for feeding pigs. Very fine Figs are also grown around Cinarca.

Much more important is the Olive, which flourishes in many parts of the island from Bonifacio and Propriano in the south, to Vescovato on the north-east coast; the neighbourhood of Cinarca, which is one of the most fertile districts of Corsica, Corte in the very heart of the island, and Cap Corso in the north also yield vast supplies. Olives are useful in the first place as food. They are, however, chiefly employed for producing oil, which is often of very excellent quality. Even then the Corsican has not done with them. At the little port of Macinaggio one day I saw a small coasting boat lying at the wharf, and a number of men wheeling something on board. On examination I found a large heap of brown matter consisting of the kernels and crushed skins of Olives, and was told that this was the waste from native oil works now in process of being exported to Italy in order to be used again.

The gathering, preserving and pressing of the Olives finds employment for a great many of the inhabitants, and in Bonifacio at the time of the ingathering, there is a general muster of the inhabitants, who leave the city in the morning not to return again till the close of day. During the intervening hours the place has the appearance of a deserted city, the women especially taking their part in the gathering of the fruits. They frequently go long distances to their work, the whole family riding on their little donkeys, and the cavalcade often passing out of the city or returning thereto single file, like Indians on the march.

The following paragraph summarizes what one writer has to say about the good and ill-effects of depending largely on the Olive. There is a region called the Balagna, which is a very garden of Olive trees. It is renowned throughout the island for its richness and fertility. The proprietors are the peasantry who live a very *far niente* kind of life. The Olive tree requires little trouble if pruned and manured from time to time, and yields an abundant, easily-earned harvest, which enables the owners to pay off their debts and retain a surplus on which to eke out an idle existence till the next crop is ready. Why should one work when the future is secure? Hence the cultivation of the Olive on a large scale would appear to engender apathy and indifference to work on the part of the peasantry.

The Grape Vine also flourishes everywhere, and writers who profess to know something of the subject are loud in praise of the various wines produced in different parts of the island. Dr. Bennet, who did so much to open Corsica to the English, says that "The Vine is cultivated with great success, and admirable wine is made, of rather a full-bodied character, especially on Cap Corso (in the north), and Sarténe (in the south)." Indeed, wherever one goes, the *Vino del paese*, or *Vin ordinaire*, is to be met with, sometimes placed on the table free, at other times to be taken with other kinds from the wine card on payment of a small sum. With reference to Cap Corso, Dr. Bennet adds (*Winter and Spring on the Mediterranean*, p. 366): "The mountain of Cap Corso and its ravines have a great local reputation for their wines. My friends at Bastia repeatedly excited my envy by the choice specimens of these unknown wines that they offered me."

The following paragraph from one of the Guide Books fully establishes the remarks of Dr. Bennet:

"Les coteaux du cap Corse produisent d'excellents vins qui, soumis à certaines préparations peuvent se diviser en trois catégories: le vin blanc façon madère, le vin cuit façon malaga et le muscat du cap Corse; en outre, on y trouve d'excellents vin ordinaires. Dès le XVIII^{e} s., les vins du cap, achetés par les Italiens de Livourne, étaient revendus par eux en Allemagne comme vins d' Espagne."

For a time the industry suffered greatly through the ravages of the blight, with which the growers were unable to cope. New Vines, however, were introduced, and in the latter part of the nineteenth century "were being extensively planted everywhere throughout Corsica to replace those that have been destroyed by the disease," so that to-day large quantities of wine are being produced. A great deal of the land around Santa Lucia di Tallano, for example, is planted with vines, and from them is produced an excellent wine known as *Vin de Tallano*. It resembles, according to one authority, a fortified port, which improves with keeping, and eventually becomes a very superior wine. It is one of the best-known in the island. Ghisoni again is renowned for its vintage, while it is affirmed that "Les vins de liqueur de Canari ont une réputation meritée." Not far distant is Pino, the place to which the Roman Seneca was banished, and here Dr. Bennet, half-a-century ago, drank wine which the cultured parish priest had made from his own vintage. The entire region is full of charm, and suitable for the growth of almost every kind of fruit.

The folklore of Corsica is at present so little known that a legend relating to the Vine may here find a place. On the north-west coast lies the seaport town of Calvi, near which the waters of the Secco overflowing the lowlands once formed a marsh which was known as Vigna del Vesco, Vigne de l'évequê or the Bishop's Vineyard. The popular legend is that one day, when the Grape gatherers were indulging in the pleasures of the season, the Bishop of Sagone, who then resided at Calvi, fell a victim to the blandishments of a pretty maid, who prevailed on him to place on her finger his episcopal ring. As he was doing so the ring slipped, fell to the ground, and was lost. Next day, when his Lordship revisited the spot in the hope of recovering his lost treasure, lo! he found a pool covering the place where the vineyard had been. Remains of a wine press have been found both near and within the pool, which attest the former presence of a vineyard here.

Among the other fruits which are found in Corsica, mention might be made of the Arbutus which grows wild and forms an important part of the *maquis*; Guavas, Apples, the Loquat or Japanese Medlar, and others, not to mention the purple berries of the Myrtle, the black pellets of the Phillyreas, the brown-red nuts of Lentiscus (Pistacia), and the red fruits of the Sarsaparilla which is often used for hedgerows. Nor must the Gourds be overlooked, since these are used when dry as flasks and bottles for wine and other beverages, and are carried by workers and travellers filled with liquor for their refreshment. They may be purchased by visitors in Ajaccio and elsewhere, curiously ornamented, and form one of the very few mementos which it is possible for a foreigner to bring away. The Pippins, or *Pommes reinettes* of Bastelica and Lota, are much in request, their reputation being excelled only by that of the Apples grown in and around Renno, between Vico and Evisa.

It would be of interest in this connection to say something about the soils and geological formations to be met with in different parts of the island, but the subject is too wide for treatment here. It might, however, be worth attempting later, when our plant studies are complete, since the vegetable productions of necessity depend in large measure on the constituent elements of the soil. *Hilderic Friend.*

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* Corsican Horticulture, *The Gardeners' Chronicle*, June 18, 1927, page 434.

GHENT QUINQUENNIAL EXHIBITION.

April 21 to 29.

AN experience covering thirty-five years permits us to state that the Société Royale d'Agriculture et de Botanique de Gand has never held a finer exhibition than the one which was opened in state by the King and the Queen of the Belgians on Saturday of last week.

Very many British horticulturists know the Palais des Fêtes in which the show is held; a huge, well-lighted building of the size and style we should like to see in the possession of the Royal Horticultural Society. The orange and yellow festooning just below the roof was, perhaps, a little too daring for British tastes, and the red gravel used on the paths was also of brilliant hue and rather trying when close to the vivid colouring of masses of Azaleas. Here, however, our real criticism ends, and we have nothing but praise for the wonderful way in which M. Henri de Wilde, the "Architecte de l'Exposition" arranged the various exhibits in the main hall so as to produce a beautiful whole; even more clever and daring was his arrangement of the large annexe, which housed the Orchids and rarer foliage plants, with its water-falls and blue-tiled pool.

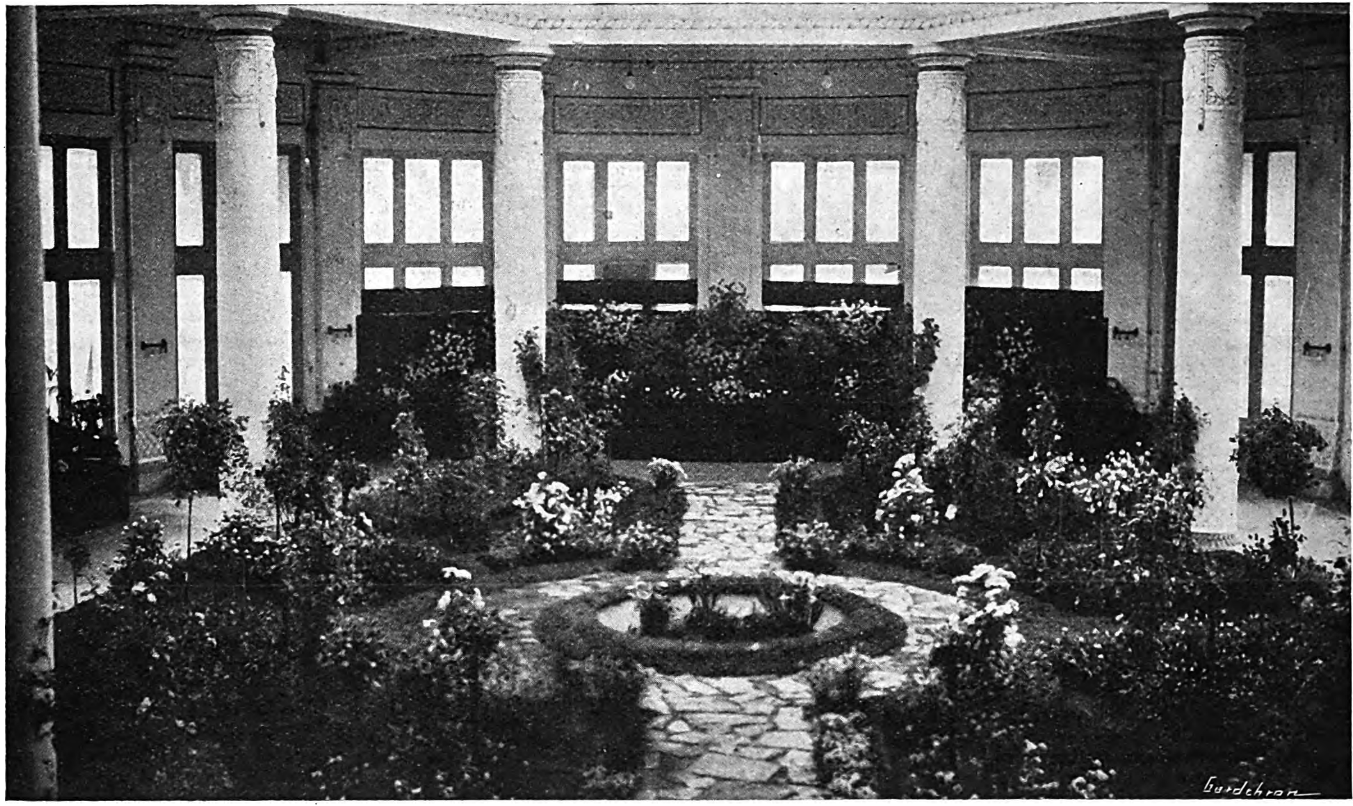

FIG. 143.—GHENT EXHIBITION: VIEW IN THE BRITISH SECTION.

As is to be expected at Ghent, Azaleas were a magnificent feature, and whether they were viewed from the handsome new staircase near the entrance, or from the balcony of the British Section, the effect was remarkably fine and the colouring wonderful. There were thousands of Azaleas, of all sizes, shapes and colours, and we have never seen these plants in such fine condition. All around the great hall tall Palms and Araucarias provided a deep green setting for the brilliant Azaleas and Hydrangeas.

Orchids were another splendid feature, and there have never been so many shown at any previous Ghent Show; indeed, we feel safe in stating that at no other exhibition have Orchids been so extensively and splendidly displayed. In this section the British growers were well represented by Sir JEREMIAH COLMAN, Bt., Reigate; Messrs. SANDERS, St. Albans; Messrs. CHARLESWORTH AND Co., Haywards Heath; and Messrs. STUART LOW AND Co., Enfield.

Around the large pool in the Orchid annexe, were arranged the beautiful plants of Medinilla magnifica, from the King's garden at Laeken; these lent an air of distinction to the section, and their pendant racemes of bloom were very greatly admired by everyone. Behind these were rows of specimens of Phoenix Roebelinii, and three groups of Palms and Tree Ferns, while at the end, behind the waterfall, Messrs. VAN HOUTTE had a monster exhibit of giant Codiaeums, Dracaenas, Alocasias, Tree Ferns, Anthuriums, Cycads and many other fine-foliage plants, such as are rarely seen nowadays. To this exhibit the Grand Prix d'Honneur was awarded. Behind all these foliage plants came the Orchids; an exquisitely brilliant and pleasing spectacle.

Two big bays are recessed from the main building, and one of these was filled by the Dutch growers with a superb display of Tulips, Lilacs, Roses, alpine and other plants. The other bay housed the French section, where Cinerarias, Carnations, Anthuriums, Orange trees, and many rare exotic foliage plants provided a very pleasing and interesting feature. The British Section occupied a large site upstairs.

Judging began early on Friday, April 20, and the assembly room would have rivalled the language troubles we associate with the building of the tower of Babel, for at least a dozen nationalities were represented. Eventually the judges were divided into twenty-five sections. The Juré d'Honneur consisted of Baron Jecco, President; M. Delbecke, Conductor; Mr. Charles H. Curtis, Secretary; Madame de Vilmorin, Sir Wm. Lawrence, Mr. W. Oldham, Mr. George Monro, Mr. E. Krelage, Herr Scheitleg, M. Cayeau, Baron Kerchove d'Exaerde and M. Bowman; Sir Jeremiah Colman, Bt., Lady Boscawen, Mr. D. Ingamells, Mr. H. Jolis, Mr. Engelmann, Sir Frederick Moore and Mr. Oldham were presidents of various sections of the Jury, and Mr. Fred Sander, Mr. J. S. Brunton, and Mr. G. W. Leak were Secretaries, while Mr. R. Brooman White, Mr. S. Low, Mr. C. E. Pearson, Mr. W. E. Wallace, Mr. A. E. Amos, Mr. Fearnley Sander, and Mr. Alfred W. White, also served as judges. Not all the sections had completed their duties by lunch time, but all were quite ready for the hospitality provided by the Society.

Opening Ceremony.

The opening of the exhibition in Royal state was a very gorgeous and dignified affair. All the leading officials of the Ghent Society, led by Count André de Kerchove de Denterghem, received the King and Queen of the Belgians, but there was a bewildering number of ambassadors, while cardinals and bishops vied with the Lord Mayor of London and his Sheriffs in the matter of colour and dignified splendour. It was a great function with a great crowd of prominent people from many lands.

After the opening ceremony the Royal party visited the Dutch section, passed on to view the Orchids, and then went upstairs to the British section. Here they were received by Mr. George Monro (President), who presented Mr. D. Ingamells (Vice-President), Mr. Jolis (Director), and Mr. C. H. Curtis (Secretary) to His Majesty. Mr. Curtis had the unexpected honour of presenting Sir William Lawrence, Mr. Mark Fenwick, Mr. W. Oldham, Mr. Merryweather, Mr. Arluison and Mrs. George Monro to the Queen, and Mrs. Monro then presented Her Majesty with a beautiful basket of Roses and Carnations cleverly arranged by Mr. Jolis. Mr. Monro accompanied the King around the British section; Mrs. Monro and Mr. Jolis escorted the Queen; Mr. Ingamells was attached to Prince Charles, and Mrs. Jolis and Mr. Curtis accompanied Princess Marie José during the tour. During their visit the Royal party expressed unfeigned pleasure in all they saw, and spoke to and shook hands with many of the members of the British party.

British Section.

On this occasion the British section was arranged in the large upper space which was filled with Orchids five years ago. On the balustrading overlooking the main hall there was a big British coat of arms supported by Union Jacks, while on either side the Solaflex Co. had provided two signs, one bearing the word "British," and the other one "Section." On the top of the balustrading were boxes of pot Roses.

Two flights of steps led up to the British section and a wide, pillared corridor came between the heads of the stairs. In this corridor there were beds of Cinerarias from Mr. P. Ladds, Swanley, small isolated groups of Hydrangea Parsifal from the same grower, and, directly in front of the pillars, imposing pedestals surmounted by wide ornamental bowls, each one filled with about a gross of blooms of one variety of Carnation; there were five of these elevated bowls on each side of the corridor.

Behind the pillars two fine groups of South African fruits filled one side. One of these, from Messrs. Geo. Monro, Ltd., showed the fruits as imported, in the boxes, with a few baskets of fruits to show the variety and quality. White and black Grapes, Pears, Quinces, Plums and Grape Fruits were shown in great variety and afforded ample evidence of the skill of the South African growers and packers.

Next to this came a display of fruits contributed by the High Commissioner of the Union of South Africa, and here the fruits had been transferred from the packing cases and arranged tastefully in very attractive ornamental baskets. Grapes were represented by capital bunches of black and white varieties, while Grape Fruits, Pears, Plums and Apples, the latter being well-coloured and showing up against the green, grass-like, raffia-matting groundwork, were also exhibited.

On the opposite side, Messrs. Sutton and Sons arranged one of their splendid groups of finely-grown vegetables. The Cauliflowers, Peas, Onions, Cucumbers, Lettuces, Endives, Radishes, early Turnips, Carrots, Tomatos, early Potatos, Mustard and Cress, Beet, Seakale, Asparagus, early Cabbages, dwarf Beans, Chicory, Mushrooms, Globe Artichokes, Oxalis tubers in three colours, and Chinese Artichokes, were magnificently displayed.

By the side of Messrs. Sutton's group, *The Gardeners' Chronicle* filled a considerable space with an attractive exhibit of coloured and black and white supplement plates; coloured transparencies for a new set of six coloured plates (with preliminary prints); and copies of the paper containing photographs of Belgian horticultural celebrities.

The corridor led through a Rose decorated archway to the main feature of the British section—an old English Rose garden—very tastefully designed and arranged by Mr. H. Jolis, with the assistance of Mr. F. Ladds, Mr. D. Ingamells, Mr. J. Artindale, Mr. Robinson, Mr. Scheuermeier, Mr. and Mrs. Monro, Mrs. Jolis, Mrs. Ingamells and Mrs. Curtis.

Imagine a series of eighteen beds, set in grass, with a central Lily pool and a crazy-paved path leading from one end to the other and encircling the pool—all these arranged in an elongated oval garden—and readers will gain some idea of the design of the display. Further, imagine the beds well filled with Polyantha, dwarf, standard and rambling Roses, with ramblers trained up the pillars, and an even better idea of the work and beauty of the effort may be obtained. It was a bright and yet restful display, especially after the brilliance of the Azalea and Orchids in the big area below. The paths were margined with Polyanthuses supplied by Messrs. R. H. Bath, Ltd., and Messrs. W. Artindale and Son. The pot Roses, about five hundred in all, were contributed by Messrs. T. Rochford and Sons, Messrs. J. Sweet and Sons and Mr. Philip Ladds, while the cut Roses came chiefly from Messrs. Ernest Stevens, Ltd., Mr. George Mount, and Messrs. Lowe and Shawyer, and Mr. Jolis used these cleverly to make up beds of both dwarf and standard Roses, and it was difficult to detect these made-up "plants" from those grown in pots. Ophelia, Golden Ophelia, Molly Sharman Crawford, Columbia, Richmond and Madame Butterfly were the leading varieties of cut Roses, while Tausendshon, Paul's Scarlet Climber, Excelsa, Golden Salmon, Mrs. W. Cutbush and Superba were the principal pot Roses—all bedded in leaf-mould and fibre.

Golden Arum Lilies, placed in the pool, lent a pleasing touch of colour to a section that received and merited universal praise.

Around this garden, in the turf banks, little beds of Stocks and Mignonette, from Messrs. Sweet and Sons, lent fragrance to beauty, while at the corners of the steps leading to the paths, were groups of blue Irises.

Clematises, in which the Queen showed a particularly keen interest, were exhibited freely by Messrs. L. R. Russell, Ltd., who put up a fine group wherein were utilised the varieties Nelly Moser, Lagerstern, King of the Belgians, President, King Edward VII, The Queen, Empress of India, La Lorraine, the semi-double Daniel Durondo, the pure white George Dickson, Marie Boisselot and Edouard Defosse. Behind these were Vitis Henryana, V. himalayana, V. repens, Clematis Meyeniana, and a few finely variegated Ivies.

At one side, opposite the Clematises, Messrs. Stuart Low and Co. filled a large table space with attractive vases and stands of Carnations Brilliant, Yvonne Holmes, the crimson Sir Philip Sassoon, Topsy, Shot Silk, White Pearl, Hon. Charlotte Knollys, Happidais, Sheila Greer, Ruby Glow and the Malmaison variety Lady Daresbury.

At the far ends of this portion of the British section, Messrs. C. Engelmann, Ltd., arranged a brilliant exhibit of Carnations, and the arrangement was capital. The Saffron Walden firm contributed five large vases and stands of Laddie, Snow White, Enchantress, Supreme, Rouge, Improved Ward, Topsy, Katja, White Pearl, Hebe, the new and quaint Palette, pale yellow and pink; Mauve Sunshine, Nero, Citron, Master Michael Stoop, very attractive, Aviator, Lady Northcliffe, the yellow Saffron and the apricot-tinted Sunny; altogether a very fine display.

Two beautiful corner groups of Hydrangeas from Mr. P. Ladds were very pleasing, the leading sorts being Parsifal, Radio and General Foch.

All the beds and borders and the Rose garden itself, were edged with wide turf verges, and on the two pillars between the corridor and the Rose garden, were two panels setting forth the names of the Committee of the British section and the principal exhibitors.

New and Rare Plants.

New plants and flowers filled one table in the British Section and attracted a great deal of attention. Messrs. Oliver and Hunter, Moniaive, sent a dozen plants of the blue Meconopsis Baileyi, each carrying one or more flowers. H.M. the Queen of the Belgians, and the Princess, showed great interest in this "Blue Poppy."

Messrs. Stuart Low and Co. put up vases of Carnations Happidais and Daphne; Messrs. Allwood Bros. showed Carnations Velvet and Wivelsfield Copper, and vases of Dianthi Allwoodii Roger, Molly, and Ann. Mr. C. Engelmann staged his new Carnation varieties Sunny, Spes, deep cerise; Mab, soft cerise; and Paddy, dark crimson. Messrs. A. F. Dutton, Ltd., had two large vases of their fine, scented, crimson Carnation, Mrs. A. J. Cobb, of which Princess Marie José accepted a flower to wear in her coat.

Mr. P. Ladds sent examples of his Covent Garden strain of Cinerarias; these are moderately dwarf, freely branched, and have very neat flowers in a considerable range of pleasing colours.

Finally, in the centre of the table there were half-a-dozen plants of unnamed Hippeastrums from Lady Aberconway and the Hon. H. D. McLaren, Bodnant, North Wales; the white, crimson, and crimson-shaded sorts were very much admired. Only one flower—a partly opened one—received any damage during the long journey, while the Meconopsis travelled from Scotland without even a broken leaf.

Awards to British Exhibitors.

Apart from the Orchid section, the awards to British exhibitors included Special Cups (Prix d'Honneur and Objets d'Art) to Mr. Philip Ladds, Mr. C. Engelmann, Messrs. Sutton and Sons, Messrs. George Monro, Ltd., the High Commissioner for South Africa and Messrs. L. R. Russell,. Ltd.

Other Prix d'Honneur were awarded to Messrs. Stuart Low and Co., Messrs. T. Rochford and Sons, Messrs. J. Sweet and Sons, *The Gardeners' Chronicle, Ltd.*, and Mr. W. E. Wallace.

The awards to New Plants and Flowers were:—Gold Medal to Messrs. A. F. Dutton, Ltd., for *Carnation Mrs. A. J. Cobb*; Gold Medal to Messrs. Oliver and Hunter, for *Meconopsis Baileyi*. Silver-gilt Medal to Lady Aberconway and the Hon. H. D. McLaren, for new *Hippeastrums*; to Mr. C. Engelmann, for new *Carnations*; and to Messrs. Allwood Brothers, for new *Carnations* and varieties of *Dianthus Alwoodii*. Silver Medal to Mr. Philip Ladds for his Covent Garden strain of *Cinerarias*.

R.H.S. Awards.

The Royal Horticultural Society sent a deputation composed of Sir William Lawrence, Bt., Mr. George Monro and Mr. W. Oldham. Other members of the Council and Vice-Presidents present were Lord Ullswater, Mr. Mark Fenwick and Mr. G. W. Leak.

The deputation awarded ten Gold Medals as follow:—To the Horticultural Union of Aalsmeer, for Lilacs and Roses (Dutch section); to Messrs. Sanders, St. Albans and Bruges, for Orchids; to Mr. Theodore Pauwels, Meirelbeke, Ghent, for Orchids; to Vermaerche de Meyer, Gentbrugge, for a magnificent group of Azaleas; to the Flandria Company, Bruges, for Azaleas; to Mr. Th. Piens, Melle, for a gorgeous display of perfect specimens of the brilliant scarlet Azalea Apollo; to Messrs. Van Houtte, La Pinte, for a magnificent exhibit of ornamental foliage plants; to Messrs. Vilmorin, Andrieux et Cie., Paris, for Cinerarias and other plants; to Mr. C. J. Van Tubergen, Haarlem, for rare alpine and other plants; and to the Central Bulb Association of Haarlem, for Tulips and Lilies.

Orchids.

Orchids were shown superbly and, as already stated, at no exhibition have we previously seen Orchids exhibited so extensively. Cymbidiums were very much to the front, and Messrs. Sanders' "forest"—with paved glades—was a superb effort.

A magnificent exhibit was staged by that popular and enthusiastic Belgian amateur Orchid grower, M. Firmin Lambeau, Brussels. Cymbidiums again provided a background for finely grown Cattleyas, Laelio-Cattleyas, Brasso-Cattleyas, Cypripediums and Miltonias. A few outstanding sorts in this beautiful collection included a superb plant of Brasso-Cattleya Pallas, carrying six flowers of wonderful size; B.-C. Mont Cenis var. Princess Marie José, B.-C. mirabilis, B.-C. Cliftonii, B.-C. speciosa, Laelio-Cattleya Soulange, Cattleya Wolstersiana var. Vogelsang, C. Imperator, Laelia Gladiateur—very fine—Miltonia Bleuana var. Reine Elizabeth, a big plant of Angraecum sesquipedale and a fine lot of Cypripediums. M. Lambeau received many awards, including the special Championship Award presented by His Majesty the King of the Belgians.

Sir Jeremiah Colman, Bt., won three first and one or two second prizes for Orchids. He arranged a large group thus far from home and maintained the prestige of British amateur Orchid enthusiasts. The Gatton Park display was a fine one, and contained a fine lot of Lycastes, Brasso-Cattleyas, and Dendrobiums, and was conspicuous in that it contained very few Cymbidiums. Particularly good were Masdevallia Pourbaixii, Dendrobium Huia, Brasso-Cattleya Gatton

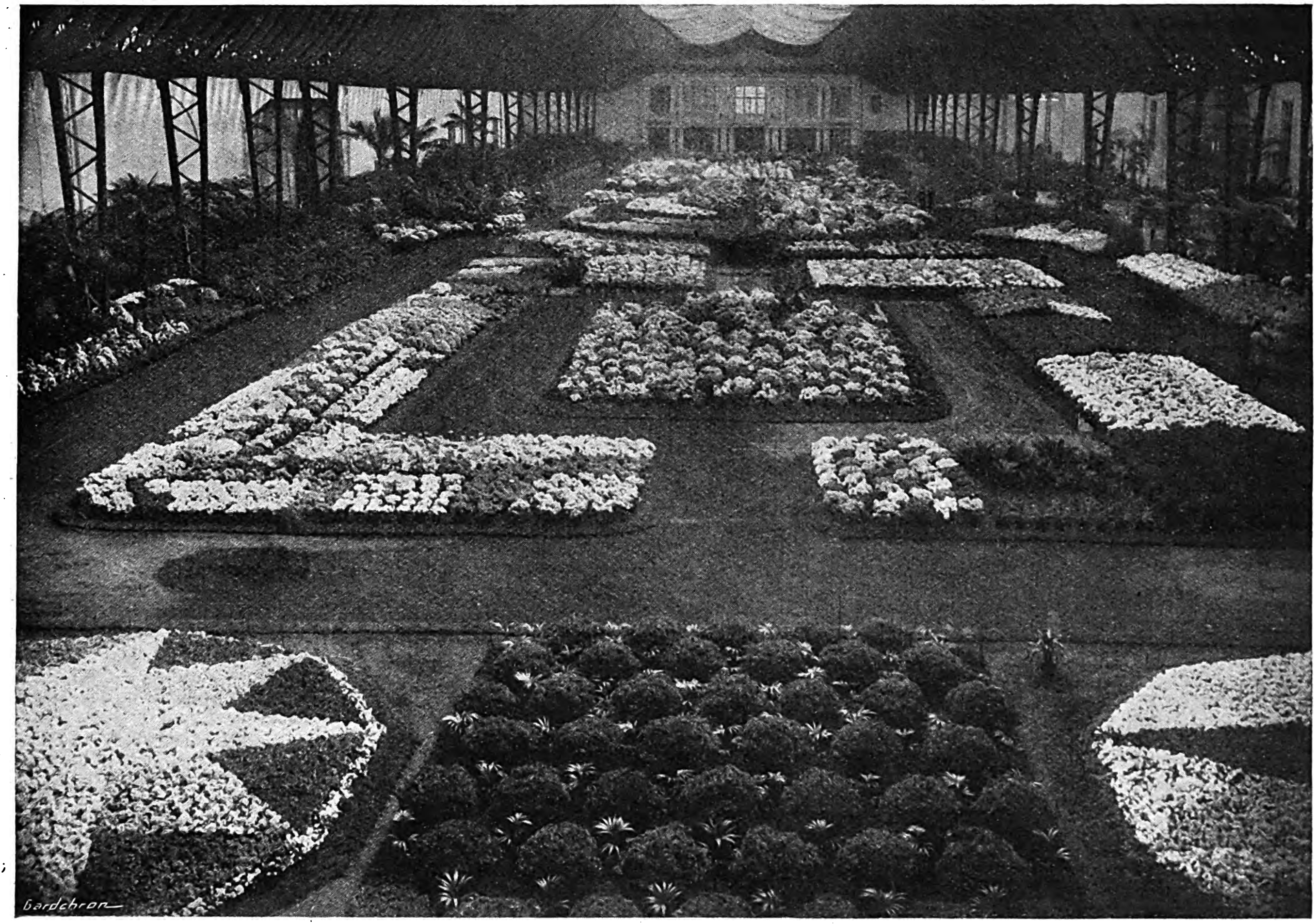

FIG. 144.—GHENT EXHIBITION: GENERAL VIEW OF THE SHOW FROM THE BALCONY OF THE BRITISH SECTION.

Lily, B.-C. speciosa, a big example of Coelogyne Lawrenceana, with over half-a-dozen spikes, Vanda suavis alba, Leptotes bicolor, Megaclinium purpureo-rhachis, with a wide, spirally-twisted rhachis—very quaint, and the sensitive Bulbophyllum barbigerum.

One of the grandest groups of Orchids ever seen was put up by Messrs. **Sanders**. This occupied a big corner in the Orchid annexe and was a marvel of arrangement, and was variously designated "The Orchid Forest" and "The Orchid Jungle." Giant Tree Ferns towered to a height of about thirty feet above the pathway, and below these were groupings of Palms and Cycads, and, lower still, a long curved, moss-covered bank. Below the bank a roughly-paved path cut off the high bank from the frontal portion consisting of a big arrangement of moss-covered rocks that provided a setting for hosts of Cymbidiums carrying, altogether, several thousands of spikes of beautiful flowers. The forest path sloped down at each end to the floor level of the section.

The elevated Tree Ferns were clothed with Phalaenopsis Rimestadiana and Oncidium macranthum, these Orchids flinging their flowers high above the Cymbidiums, which in turn carried their blooms well above the nooks and bays and banks of choice Odontoglossums, Odontiodas, Dendrobiums and Miltonias; one slope covered with Miltonia Bleuana was particularly beautiful, and in a little nook we noticed the bright ruby and rose-red M. Prince Astrid, a new hybrid of brilliant colouring.

This display was confusing to the enthusiast because it contained so many good things that competed with each other for attention. We admired two groupings of Dendrobium infundibulum; a wide, moist recess filled with Cypripedium Maudiae; the distinct Zygopetalum Perrenoudii, Cypripedium Claire de Lune, a big Angraecum sesquipedale with its ivory flowers Burrageara Windsor, Vanda teres, a large plant of Coelogyne Lawrenceana, and Miltonia Reine Elizabeth. Among so many fine Cymbidiums it was difficult to choose, but a few that appealed to us were C. Joy Sander, C. Venus in variety, C. insigne in variety, C. Guillemot, C. Alexanderi, C. Ceres and C. brugensis. But all these are only a tithe of the good things in an exhibit that surpassed anything Messrs. **Sanders** have previously accomplished at an exhibition.

Nor may we omit mention of another large exhibit of Cymbidiums across the path, and two big beds of these Orchids near the entrance and close to the "blue lagoon."

M. **Th. Pauwels** presented a beautiful and immense group of Orchids, in which three large, semi-circular mounds of Cattleyas, Laelias and Brasso-Cattleyas provided the chief features. All the plants were well-grown and particularly those of Cattleya Wolstersiana—which appears to be very popular on the Continent—Brasso-Cattleya Clarion, B.-C. Tilly, B.-C. Mossiana, B.-C. Reine Elizabeth, Cattleya Tambora and C. Cowaniae alba.

Between these groups, M. **Pauwels** arranged regiments of Odontoglossums and Odontiodas, those last including O. Meirelbekeana, O. floribunda, with four branching spikes of brilliant flowers. Oncidium Cavendishianum was associated with O. McBeanianum, O. sarcodes, Odontoglossum Rêve d'Or, and a fine selection of the choicer Cypripediums and Cymbidiums.

Dr. **Baillon**, Ghent, provided a capital display of Orchids, arranged in more or less natural fashion. Cymbidiums in great variety filled the high background and afforded an ample setting for the dwarfer Odontoglossums, Odontiodas, a great variety of Miltonias and some beautiful examples of Phalaenopsis Rimestadiana. Cypripedium niveum and Masdevallia Veitchiana were conspicuous near the front of this group. For another group, chiefly of Cymbidiums, Dr. **Baillon** was awarded a special first prize.

Odontoglossums and Odontiodas were a fine feature of Messrs. **Charlesworth and Co.**'s group of Orchids, the former genus including O. crispum, O. c. xanthotes, O. c. The Premier O. Thecla, and O. triumphans var. Raymond Crawshay. Other good things were Odontonia Aglaon, Cypripedium Emerald (Maudiae × Curtisi Sanderae), C. niveum and Miltonia Lycaena.

Messrs. **Low and Co.** had a pleasing exhibit, and showed many interesting Orchids, notably Dendrobium Brymerianum, a fine example of Cypripedium Shillianum, Sophro-Laelio-Cattleya Niobe, S.-L.-C. Oedipus, Laelio-Cattleya G. D. Ball, Dendrobium Thwaitesiae, Cattleya citrina, Cypripedium bellatulum, the old Arpophyllum giganteum, Cymbidiums, Odontoglossums and Odontiodas.

A grotto arrangement with caves and a low front of rocks, was filled with Orchids by the **Comte de Hemptinne**, St. Dennis Westrem. High up on top, with a background of Yew, Cymbidiums were arranged so that their spikes drooped outward prettily. In the caves were choice Miltonias and small Ferns, while in the foreground Odontoglossums, Cymbidiums, Odontiodas and Miltonias were arranged with Saintpaulia ionantha, and variegated Saxifrages. At each end of the group a number of Miltonias were associated with foliage plants and Anthuriums.

M. **Maurice Verdonck**'s exhibit was somewhat thinly arranged on a groundwork of stones and moss, with a background of Palms. Cattleyas were a prominent feature, and Cypripediums and Cymbidiums were shown extensively, in association with Odontoglossums, Odontiodas, Dendrobiums and Phalaenopsis Rimestadiana. Brasso-Cattleya Mrs. Maron and Cypripedium bellatulum were particularly good in this group.

M. **T. Medo Van Kan**, Rozenoord, near Ghent, an amateur grower, was a large exhibitor, and showed dozens of single-spiked plants of the newer Cymbidiums, Brasso-Cattleya Trilby, Cypripedium Maudiae, C. Holdenii, Laelio-Cattleya bletchleyensis, L.-C. Canhamiana, with fine flowers, Odontiodas and Masdevallias.

M. John Janssen's group of Orchids was arranged in more familiar fashion, with the pots covered with moss and small Ferns, and Rex Begonias between the Orchids. Here, as everywhere, the popular Cymbidiums were shown extensively, with Oncidium varicosum Rogersii, Odontoglossum serapias, O. Rêve d'Or, O. crispum in variety, O. Plinius, O. Matador, Odontioda Charlesworthii, O. Rex, O. Cooksoniae, O. Princess Astrid and Dendrobium Thwaitesiae.

M. Chas. Dietrich, Auderghem, contributed a fine collection of one hundred Orchids and made special features of Phalaenopsis Rimestadiana, Odontioda Cooksoniae, Oncidium Cavendishianum, Brasso-Cattleya Madame de Palacios and Miltonia Bleuana.

[The large crowd on the opening day and the enormous concourse of visitors on Sunday, April 22, made it physically impossible for us to complete our report within the limitations imposed by time and distance. We hope however, to complete our report of this wonderful show in our next issue, accompanied by further illustrations, but would add that M. de Wilde's orange and yellow festoons beneath the glass roof rendered photography difficult, and in some cases impossible, especially as flash-light photography was prohibited.—Eds.]

RATING OF GREENHOUSES ON PRIVATE ESTATES.

A question which frequently arises and one which often gives considerable difficulty to the parties concerned is that of whether any reduction of rates may be claimed in the case of a greenhouse or glasshouse, a Cucumber frame, etc., on a private estate where some of the produce cultivated in it is sent to the market or disposed of privately.

In the case of a market garden proper, of course, and the greenhouses used in connection with it, the usual reduction may be claimed, agricultural land referred to in the Act being regarded as including horticultural land for this purpose. But since there appears to be no definition of a market garden for this purpose in the Acts, we must look to other sources to discover whether it is possible to make it include a private estate selling surplus produce, and it would seem from the authorities on the subject, that as a general rule a private garden from which produce is occasionally sold would not be included in the term "market garden."

In a case before the courts a few years ago, the question was decided of whether a person who employs a man in a fruit and vegetable garden which is not cultivated wholly or mainly as a trade or business was bound to pay the minimum wages fixed under the Corn Production Act of 1917, and for the purposes of this case the question arose as to whether the garden in question should be considered a "market garden."

In this case the employer owned a large garden, some of the produce of which was used in the mansion house and any surplus was sold, and in the year in question realised about £60. Could this garden be regarded as a market garden? This term is not defined by the Corn Production Act of 1917, but the Agricultural Holdings Act defines it as a holding cultivated wholly or mainly for the purpose of the trade or business of market gardening, and it was held that the private garden in question could not be regarded as a market garden merely because some of the produce was put to a commercial use.

In another case, too, it has been held that where a man was engaged in gardening for pleasure, but sold some of the produce which resulted from his pleasure, he was not carrying on a trade or business.

Therefore, I think we may state that no reduction may be claimed when some of the produce of a *private* garden is sold, although, of course, if a regular business is being carried on it is possible that the garden might be regarded as one used for the trade or business of a market garden, and so give rise to a claim for privilege. *H. A. S.*

CANKER IN FRUIT TREES.

I have, unfortunately, had a good deal of experience of this disease, both in Apples and Pears. I had to cut back most of my Pear trees to get rid of the cankered parts, for I found it was little good applying external remedies. The ground in which these trees grew was very rich, and in their earlier years they grew very rapidly, to which fact I partly attribute their susceptibility to this fungus. It is now some years since I cut them back, and the new heads, which grew more slowly, remain healthy.

The first sign of approaching canker in the Pears appeared in the foliage, which, in certain winds from off the sea, turned black and moist; this was followed by canker in the branches, and I presume that the disease was wind-borne; four years after re-grafting there are no apparent signs of canker.

With regard to the Apple trees, I have found that those sheltered the most were more liable to the disease, as also were those in the richest soil; in fact, as in the case of the Pears, it seems to have been a case of too rapid growth. One section of my soil is much poorer, and has produced more healthy trees, although certain varieties suffered, but not so heavily.

King of Tompkins County, no matter where it was planted, grew rapidly and invariably became very badly cankered, so I have had to discard it and re-graft. Gravenstein is another Apple that cankered rather badly, also Reinette de Canada; James Grieve and Worcester Pearmain were only attacked in some instances; still, they are both rather liable to canker, especially in sheltered spots. Cox's Orange Pippin, in most cases, suffered; Blenheim Orange, on the whole, is satisfactory; Herring's Pippin resists excellently, and Allington Pippin is so far perfectly immune.

I am this year re-grafting all the varieties liable to attack with Crimson Bramley, Allington Pippin, Herring's Pippin and Annie Elizabeth; the last-named is also immune from canker in my ground. Rosemary Russet is free from canker, but it makes fruit buds so profusely that I cannot get the tree to extend at all; it crops heavily, and the fruits are excellent, but the tree is merely a small, scrubby bush.

St. Edmund's Pippin is, on the whole, healthy and satisfactory; Brownlees's Russet seems also a promising variety; Bowhill Pippin, Rival, Peasgood's Nonesuch and Alfriston are also good healthy sorts; and Newton Wonder is resistant, but the tree takes a long time to bear and the fruits, so far, are not large.

Gascoyne's Scarlet I am not quite sure about, as I replanted it when fairly large and it has never recovered properly, but it was quite healthy up to its removal, and shows but small liability now to canker. The variety called Sops in Wine is resistant, as also is English Peach: I believe these two are local Apples. King of the Pippins is fairly resistant.

Canker is about the only thing that troubles me, and I am satisfied that the soil is too rich, and that soil of a rougher nature is best for fruit trees.

When a tree shows liability to canker, the best thing to do is to re-graft it with a resistant variety. I believe that liability to canker depends on some quality of the bark, and that very quick growth predisposes the tree to the disease. King's Acre Pippin, in one case, suffered badly, whereas another less sheltered tree is resistant. No doubt if one had ample time, canker might be kept under by timely attention, but when such is not possible it is best to confine one's efforts to growing resistant varieties. *W. J. Farmer.*

HOME CORRESPONDENCE.

Pruning an Old Standard Rose.—I would like to hear of the experience of any other gardener or rosarian on this subject. The Rose in question is Ophelia on a rugosa stock, planted, if I remember rightly, in the autumn of 1915. As the bed was wanted for other plants, the Rose, already fourteen years old, was lifted and replanted in a new position better than the one it originally occupied, and although it was in a state of exhaustion owing to bad culture and pruning, this was done successfully in November. In March the growths were cut back to eight or ten inches to points where no signs of new wood were apparent. After I had performed the operation I sought the advice of a nurseryman and was informed that the tree would probably die; my hopes have been brightened since the short spell of sunny weather by the appearance of new eyes on the wood left; they are rather crowded. It has been suggested that the new eyes will drop off should a drought set in and continue for any length of time. I have also been advised to cut off some of the shoots where they are crowded or badly placed. I should be pleased to have any advice gained from experience. *T. P. Newport.*

Escallonia Edinburgh.—In reply to *C. T.*'s enquiry in *The Gardeners' Chronicle* (p. 235), regarding Escallonia Edinburgh, I should like to mention that while engaged at Plas Newydd, Anglesey, some five years ago, I planted an Escallonia which came labelled as E. Edinburgh variety, but I cannot now recall the firm from whom the purchase was made. It came accompanied by a specimen of E. langleyensis and, except for a difference in the colour of the flowers, I could distinguish nothing in its form or habit to disassociate it from the latter. These two varieties were given the shelter of a wall, but there were some really fine specimens—probably E. macrantha—growing in bush form, in the less formal parts of the grounds, which seemed to revel in the semi-wild state afforded them. It should, of course, be understood that the conditions that obtain at Plas Newydd are very congenial for this and similar subjects of doubtful hardiness in some parts of the country. If *C. T.* happens to have in his possession one of Messrs. V. N. Gauntlett and Co.'s catalogues of "Hardy Plants Worth Growing," he may find the object of his enquiry listed under "Special Items." I should, perhaps, mention that I secured my copy in 1919, from which one may assume that E. Edinburgh variety was a novelty of about that period. Messrs. Gauntlett describe it as "a beautiful hybrid, like langleyensis in habit, but with pink flowers, borne in large trusses," and claim complete hardiness for it. *T. Wilson, Moreton Paddox, Warwick.*

The Garden Slug.—The summary of a lecture given by Mr. A. Roebuck, that appeared in *The Gardeners' Chronicle*, p. 258, should interest most gardeners. It is noticeable that the lecturer does not appear to have recommended soot, which in the past was regarded as very efficacious, but which, so far as my experience goes, is rarely fatal, and merely acts as a deterrent. Many gardeners may wish to know where a supply of suitable alum may be obtained cheaply, for in a large garden a considerable quantity would be required. Thirty minutes is given as a suitable interval between the two dustings of lime recommended, but I suggest that this is too long. For some time past I have advised and practised two dustings of freshly-slaked, sifted lime for the destruction of slugs, applying it when they are feeding, on warm, moist nights. The slightest dusting would appear sufficient to cause the slug to slough away a film of slime, together with the lime covering it; this is accomplished in two or three minutes, and having exhausted most of their store they attempt to crawl away. In my opinion, this is the right time for the second application, which, finding them defenceless, kills them outright. Unless the first dressing is exceptionally heavy, or repeated under five minutes, the slug makes good its escape, finding shelter under a clod, leaf, or similar hiding place and the second dressing at the end of thirty minutes is without effect. The destruction of slugs is of the utmost importance to gardeners, who would probably welcome further information from Mr. Roebuck as to the best methods of destroying them. *J. Comber, Nymans Gardens.*

Abelia triflora.—Although neither so showy nor profuse in flower as some members of the genus, Abelia triflora is an extremely distinct and interesting plant, and it has also the advantage of being considerably hardier than other members of the group. It is a deciduous shrub of vigorous and somewhat straggly habit, reaching a height of ten feet or more. The leaves are lanceolate, tapering abruptly to the base and gradually towards the apex, two to three-and-a-half inches long, dull dark green on the upper surface, and paler on the lower side. A curious feature worthy of note is that although most of the leaves are entire, those at the base of the shoots are often divided. The flowers appear about June, borne in erect clusters terminating the young twigs of the current season's growth. The slender tube of the corolla is white, suffused with a delicate touch of rose, and the tube expands at the mouth into five almost white lobes. These flowers emit a most agreeable and pleasing fragrance, distinctly suggestive of, but even sweeter than, Viburnum Carlesii. Abelia triflora is a native of the north-western Himalaya, and in common with the other Abelias prefers a well-drained soil of medium texture, and is seen to better advantage when treated as a wall shrub. *Thos. Blythe, Botanic Gardens, Cambridge.*

Some Personal Observations on Small Narcissus Flies.—There is no gainsaying the fact but that serious damage has been caused by the Narcissus fly—meaning in this case, the small or lesser fly, Eumerus Strigatus. In 1927, tremendous damage was done in various parts of the country. According to that excellent book of reference I keep handy, Sanders' *Flower Foes*, the pest is of continental origin, but nevertheless, it is now widely distributed about England. I have counted as many as ninety-three maggots in one bulb, and in such severe attacks the bulb itself becomes a nasty mass of larvae, the actual plant being almost completely destroyed. The first sign of attack is failure to grow, and where this is noticed, this pest should be suspected. When we growers know that such a pest is out to attack us, it is up to us to be on our guard, for only by such means can we control obnoxious pests. Having dug carefully round where the suspected bulbs lie, a search should be made for the maggots. You will find them to be almost half-an-inch long, a dirty creamy-white in colour, and having no legs whatever. As a sure means of identification, you will see at one end of the larvae a reddish projection. You see them as larvae, but they soon change to the pupae, but before doing so they wend their way closer to the surface of the soil so that when the perfect insect (the fly in this case) emerges, it has no difficulty in reaching the air. I find that the flies emerge in May, when they lay on or in the bulbs. It is obvious that the easiest passage for the fly to the bulb itself is down the hole left after the leaves have partly withered, and I have often found the most severe attacks where the passage is easy. Perhaps, then, it may be new to many readers to know that by earthing up the bulbs, so soon as they have flowered (there must be no delay), an attack may be warded off. The earthing up need not be severe, merely to block up all holes near the leaves. This is one means of prevention. Another is to use soil fumigants, such as naphthalene, or any well-known make of sterilising chemical. The treatment of infected bulbs is drastic. They must be burnt. I should have no hesitation in removing the infected soil in bad cases. Where an attack is feared, or if an attack is at hand, but only moderate in intensity, I find the best course is to apply soil fumigants when the pest is in the form of pupa (*i.e.*, in spring), and then to dig deeply and to bury deeply the top spit. This will help to imprison the imago when it emerges, and the fumigant will destroy it. *C. G.*

SOCIETIES.

NATIONAL ROSE.

April 20.—The Spring Rose Show of this Society, which was held at the Horticultural Hall, Westmister, on the above date, was not quite so good as its predecessors. The amateurs' exhibits fully equalled their high standard at previous shows, but some of the trade growers appeared to have experienced difficulty in successfully "timing" their blooms, and did they exhibit so largely as was expected. In consequence, the general effect of the show suffered somewhat from a lack of brilliancy in the groups staged on the tabling, and there were vacant places. However, there were many really admirable blooms to be seen, and it seemed to us that the flowers were distinctly more fragrant than is usual with forced Roses. The attendance was very good indeed, and within a short time of the opening of the doors the visitors had gathered four deep along the tabling allotted to the new seedling Roses. A fair number of novelties were submitted, but only two were found worthy of recognition.

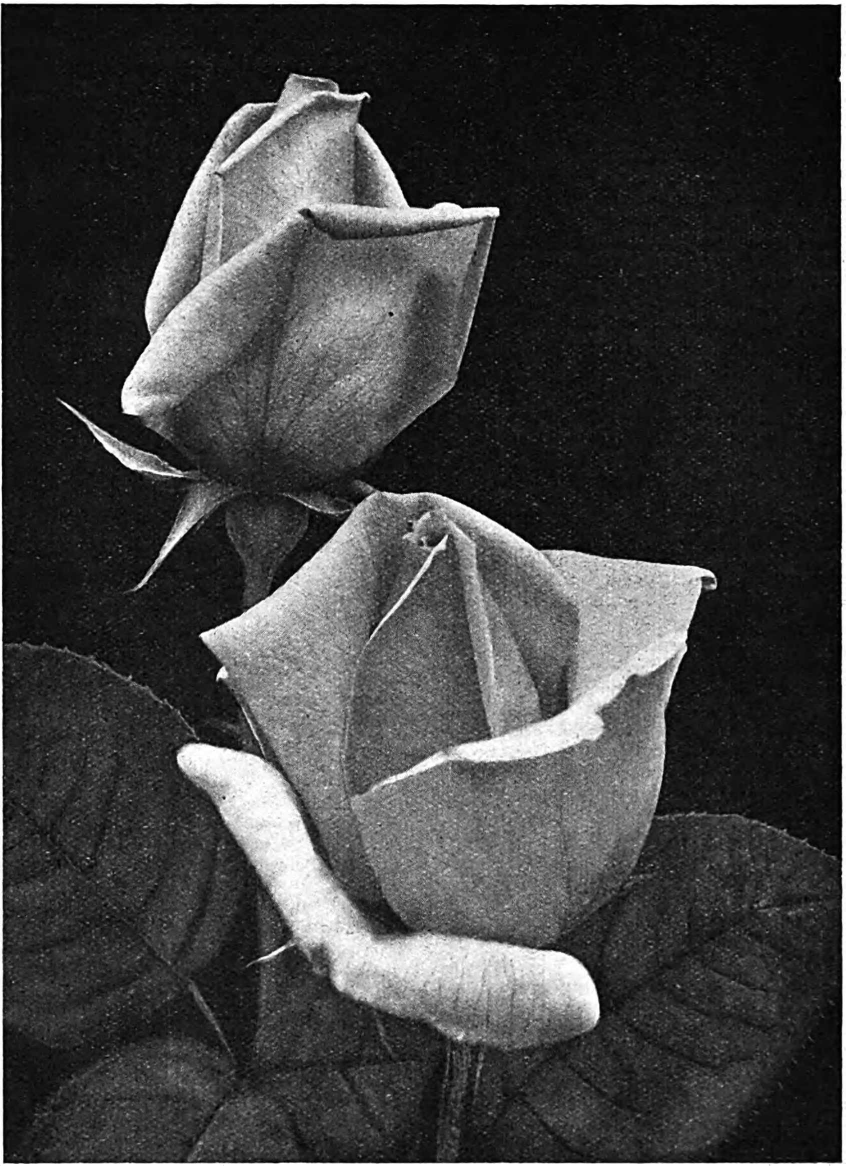

FIG. 145.—ROSE MAY WETTERN.

N.R.S. Gold Medal, April 20. A large H.T. variety. Petals, pink, paler on the inside.

Shown by Messrs. A. Dickson and Sons.

Gold Medal.

May Wettern.—This handsome H.T. variety received a Certificate of Merit last year. It is a large, shapely bloom, and the broad, deep pink petals recurve gracefully showing the paler colour of the inside. The flowers are slightly fragrant. Shown by Messrs. **Alex. Dickson and Sons.**

Certificate of Merit.

Chaplin's Pink Climber.—The large group of plants of this variety which was shown illustrated a vigorous and graceful habit. The parentage is given as American Pillar and Paul's Scarlet Climber, and it is classed as a hybrid Wichuraiana. In foliage and general habit this new variety more closely approximates American Pillar, but the flowers are larger, of a beautiful shade of soft pink, and have a small cluster of golden stamens. It appears to be a valuable pillar Rose. Shown by Messrs. **Chaplin Bros.**

Other Novelties.

The best of the varieties which did not receive award have already been given the Society's Certificate of Merit. *Adèle Crofton*, shown by Messrs. **Alex. Dickson and Sons,** made an attractive vase. The shapely flowers were of good orange colour, and they are pleasantly fragrant. *J. C. Thornton*, a medium-sized H.T. variety of vigorous habit and bright velvety crimson colour was again shown by Messrs. Bees, Ltd. *Sunshine*, shown by Messrs. W. Cutbush and Son, gains in orange colour as the season advances, and the blooms were decidedly fuller and richer in colour than a fortnight ago. It is a desirable dwarf Polyantha variety of delicious fragrance. *Mrs. Hilton Brooks*, which was shown by Messrs. F. Cant and Co., is a sweetly-scented H.T. variety of a rather variable shade. The general colour seemed to be blush-pink. The long-shaped buds were pretty, but the mature flowers were shapeless, due, perhaps to overforcing to have the flowers open for the show. *Hilda*, a large H.T. variety, shown by Messrs. B. R. Cant and Sons, is of cardinal-red colouring on the outsides of the petals. *Margaret Spaull*, also shown by Messrs. B. R. Cant and Sons, is a slightly fragrant H.T. variety. The flowers are of pale orange colour, lightly flushed with pink and gold. *Souv. The Old Rose Garden* is, like its name, of uncommon appearance, but deliciously fragrant. The fully double, rounded flowers are of slightly varying shades of mid-pink and all the petals are lightly edged with white. This is another seedling from Messrs. B. R. Cant and Sons.

Groups of Roses.

The large, circular group of pot Roses, arranged by Messrs. Chaplin Bros., was very imposing, and contained many really good plants. There were tall standards of H.T. and Polyantha varieties, with a groundwork of dwarfer, floriferous examples. The centre of Paul's Scarlet Climber, White Dorothy and other sorts was very effective. The chief H.T. varieties were Lord Charlemont, Betty Hulton, Mrs. Henry Bowles, Dean Hole, Fascination, Shot Silk and Mrs. Herbert Nash. Messrs. Chaplin Bros. were deservedly awarded the first prize and they also won the first prize with a delightfully arranged circular group of Polyantha varieties, also arranged on a floor space. In this they had excellent standards of Mrs. W. H. Cutbush, Lady Reading, Ellen Poulsen and other good sorts, rising above La Reine Elizabeth, Locarno, Ellen Poulsen, Susanne Miller and Golden Salmon of great merit. Mr. J. H. Pemberton, who was second, had an oblong group of standard Golden Salmon and Ellen Poulsen, with dwarfs of Chatillon Rose, Ideal, White Orleans and other varieties. Messrs. W. Cutbush and Son were awarded the third prize for an arrangement which was admirable in its inception, but planted rather thinly. Their chief varieties were Golden Salmon, Greta Kluis, Sunshine and Kersbergen. Messrs. F. Cant and Co. were fourth.

Mr. Elisha J. Hicks was decidedly first in the class for a group of cut Roses arranged on the tabling. He had a background of very bright and floriferous stands of Golden Salmon, Pride of Hurst, Mary Hicks and La Reine Elizabeth. The many stands and vases of H.T. varieties were equally admirable, and included Betty Uprichard, Madame Butterfly, Clovelly, Ophelia, Charles E. Shea, America and Marie van Houtte. Messrs. B. R. Cant and Sons, who were second, had mostly such H.T. varieties as Phoebe, Lady Wakefield, Lady Forteviot and Padre. Mr. George Prince in his third prize group, had Allan Chandler, Mabel Morse, Betty Uprichard and Shot Silk.

In the nurserymen's class, for twenty-four exhibition Roses on boards, Messrs. B. R. Cant and Sons were awarded the first prize for a good variety which included Mrs. Beatty, A. Hartmann, Phoebe, Sovereign and Covent Garden. Mr. E. J. Hicks was second, and he included J. G. Glassford, America and Stanley Baldwin, of good quality. With splendid blooms of Marechal Niel, which included the premier bloom of the trade classes, Mr. A. T. Goodwin was easily first in the class for twelve blooms of any exhibition variety. Messrs. B. R. Cant and Sons had a good board of Mrs. Beatty. Mr. Goodwin also won first prizes with splendid Marechal Niel Roses in baskets.

Amateurs' Classes.

In the principal classes E. J. Holland, Esq., Sutton, added to his many triumphs by winning the two principal first prizes, the Silver-gilt Medal offered for the best bloom in the section, and was placed equal first in another class. His group of cut Roses included admirable vases of William Shean, Mrs. Foley Hobbs, Alex. Hill Gray, Madame Butterfly and Mabel Morse, with sprays of Rosa Moyesii. In the Hammond Class, which requires twelve exhibition blooms, he had a superb bloom of Mrs. Foley Hobbs (the premier bloom of the section), and splendid examples of Mabel Morse, Mrs. E. Mawley, Captain Kilbee-Stuart, Mrs. Henry Morse and Mrs. C. Hall.

The second prize in the class for a group of cut Roses was awarded to J. A. Hammond, Esq., Burgess Hill, who had very good baskets of Mrs. Foley Hobbs and Mrs. Henry Morse, and vases of Mrs. H. Stevens, Mabel Morse and Lady Margaret Stewart. H. Oppenheimer, Esq., Caterham, was second in the class for twelve exhibition varieties, and his best blooms were J. G. Glassford, Mrs. Foley Hobbs and Captain Kilbee-Stuart. L. R. Roberts, Esq., Dorking, who included good blooms of William Shean and Mrs. A. E. Coxhead, was first in the class for six blooms in not fewer than three varieties, and C. H. Rigg, Esq., St. Albans, was second.

It was in the class for six blooms of any one variety that the judges were constrained to award equal first prizes to E. J. Holland, Esq., and to J. N. Hart, Esq., Little Heath, Potters Bar. The two exhibits, of Mrs. Foley Hobbs, were of splendid quality and worthy of the honour. F. C. Elcock, Esq., Carshalton, was first in the class for six blooms, open to growers of fewer than thirty pot Roses, and he had very good specimens of Arthur Cooke and Mrs. Foley Hobbs. J. N. Hart, Esq., showing Marechal Niel, was first with a basket of any one variety, and E. H. Rigg, Esq., was first, with H. R. Darlington, Esq., second in the class for a basket of mixed varieties.

Decorative Classes.

The many Dinner Tables decorated with Roses reached an exceptionally high standard of excellence, and the judges awarded several additional prizes. In the trade class Mrs. Tisdall, Wood Green, was first with a tasteful table of Roselandia and coloured Japanese Maple foliage. Mrs. A. R. Bide, Farnham, was second, and Mrs. L. R. May was third, and both competitors also used the variety Roselandia very effectively. Mrs. Courtney Page won the first prize in the amateurs' class with a delightful table of Roselandia, Maidenhair Fern, Croton leaves and Maple sprays. Mrs. A. D. Ruff, Sharnbrook, was a very good second, and she had two bowls of Madame Butterfly and sprays of Asparagus plumosa. Mrs. Charlton was third. Mrs. Courtney Page also won first prizes with a bowl and with a vase of Roses, and Mrs. L. R. May was first in the nurserymen's class for a bowl of Roses. Both ladies displayed great artistic taste.

FALMOUTH SPRING SHOW.

The Falmouth Spring Show, held recently, eclipsed most of its predecessors in size and quality, although the absence of certain flowers had been enforced by the recent severe weather, particularly in the Rhododendron and choice shrub section. Nevertheless, the show demonstrated the versatility of Cornish horticulture by the great range of plants exhibited. One curiosity which claimed a good deal of attention was a fruiting branch of Araucaria Bidwillii from R. Barclay Fox, Esq., Falmouth. We understand that this is the first time this plant has been known to fruit out-of-doors in this country.

In the competitive classes, Narcissi occupied a large section, the premier commercial exhibitor being Mr. F. B. Lawson, of Truro, with excellent bunches of Firetail, Croesus, Dragoon and Corregio; the same exhibitor was successful in the eighteen vase and twelve vase classes, showing fine flowers of Great Warley, Silver Fleece, Mitylene, Thetis, Robin Adair and others. In the class for novelties Mr. H. J. Morris exhibited a superb new seedling.

The first prize in the Anemone class went to Mrs. Henderson Bull, who had excellent flowers of His Excellency type. In the Rhododendron classes, particularly noteworthy were good flowers of Cornish Cross, exhibited by R. Barclay Fox, Esq., and a very striking bloom of Rhododendron grande, shown by the Hon. Mrs. Colborne-Vivian, Cinerarias were superbly exhibited by Mr. Maudesley, of Falmouth. In the class for twelve vases of tender shrubs Mrs. Hext, Constantine, took the first prize. This exhibit included well-grown examples of Veronica macrocarpa, Erica melanthera, Grevillea Preissei Prostanthera rotundifolia and Cytisus proliferus; the second prize went to the Hon. Mrs. Colborne-Vivian, whose exhibit included specimens of Drymis aromatica, Teucrium Chamaedrys and Viburnum Carlesii.

Several excellent non-competitive exhibits were also staged, the Falmouth Corporation arranged a wonderful display of Coleus, Hippeastrums, Caladiums, Gloxinias, etc. A welcome innovation was the Orchid exhibit by Major Martin F. Hitchens, of St. Austell, who showed some excellent specimens of Cymbidiums, Odontoglossums, Cypripediums, etc. Other non-competitive exhibits included a display of Rhododendrons from H. Hodge, Esq., C.C., St. Austell; J. Pool, Esq., Falmouth, and C. Masson Fox, Esq., Falmouth.

Two excellent trade Daffodil displays came from Messrs. Barr and Sons, Covent Garden, and Mr. J. C. Martin, Truro, the former having a very fine trumpet in Princess Juliana, and two excellent Poets in Iliad and Orb, a fine double in Milk and Honey and good flowers of Great Warley and Beaurejarde. The Truro grower had an interesting novelty in Cutty Sark, an almost white flower with frilled trumpet. Other outstanding flowers were Great Leap, an excellent double, also Waterlily, Silver Chimes and King of the West.

The only rockery exhibit was arranged by Messrs. Maxwell and Beale, Broadstone. The Devon Rosery was supreme with a display of forced Roses, Hydrangeas, etc. Messrs. R. Veitch and Son had their usual interesting stand containing many new and uncommon plants. This group included good flowers of Rhododendron Cunningham's Sulphur and R. Robert Fox. Other plants noted included Arctotis aureola and Richardia Elliottiana. Messrs. Ruse and Sons, of Falmouth, had a glorious blaze of colour made up with Acacias, Azaleas, Spiraeas, and other flowering shrubs.

General nursery stock was shown by Mr. W. Davis, of Falmouth. The Primley Botanic Gardens, Paignton, showed many novelties and uncommon plants, including Gerbera Jamesoni, Fremontia, Rosa indica minima, Scutellaria alpina, Veronica Hulkeana, Lavendula Stoechas, etc.

In the competitive Acacia classes, F. B. Dwight, Esq., was first, with well-grown specimens of A. verticillata, A. Riceana and A. longifolia, the Hon. Mrs. Colborne-Vivian being second with a collection which included a well-grown spray of A. melanoxylon.

NEWCASTLE AND DISTRICT HORTICULTURAL.

The March meeting of the above Society was a red letter event in its history. Eight Silver Cups which had not been used since 1914—because of the cessation of the activities of the old Newcastle Chrysanthemum Society— were formally handed over to the Newcastle and District Horticultural Society.

Mr. Fox, of Messrs. Finney's, made the transference in a very able speech, full of reminiscences of the original Chrysanthemum Society and its work. In handing the Cups to the new Society, he said he hoped and wished that they would spur members to greater efforts, and that soon they would emulate the shows of the old Society. Mr. J. Dick, the Chairman of the Society and Parks Superintendent of the city in accepting the cups, cordially expressed the thanks of his Society, and said they would encourage the members to make their Chrysanthemum show the finest in the north.

An address on "The Growing of Vegetables for Exhibition," was delivered by Mr. W. Anderson, Close House Gardens, Wylam.

The exhibits of spring flowers were very meritorious. Fine specimens of Richardias, Cinerarias, Cyclamens, Primulas, Tulips and Schizanthuses were shown. Mr. J. **Houston**, Low Fell, exhibited some lovely specimens of Primula obconica, while Mr. A. **Merrington**, Jesmond, was awarded the premier prize of the evening for a splendid collection of Cyclamens.

The annual Chrysanthemum Show has been fixed for November 21 and 22 next.

ROYAL HORTICULTURAL.

April 24 and 25.—Although there was no exhibit of fruits and vegetables and only a few Orchids, the Royal Horticultural Hall, Westminster, was well filled with floral displays at the fortnightly meeting of the Society which was held on these dates, but the attendance was decidedly smaller than at recent meetings. The principal exhibits were excellent groups of Schizanthuses, Nemesias, Daffodils, Roses, Carnations, trees and shrubs and alpine plants.

The Floral Committee recommended eight Awards to Novelties. The other Committees recommended no award. The Southern Section of the National Auricula and Primula Society held its usual annual show in the Orchid Annexe.

Orchid Committee.

Present : Sir Jeremiah Colman, Bt. (in the chair), Mr. J. C. Cowan, Mr. T. Armstrong, Mr. R. G. Thwaites, Mr. E. R. Ashton, Mr. J. Wilson Potter, Mr. R. Brooman White, Mr. A. Dyer and the Hon. H. D. McLaren.

An interesting exhibit before this Committee was that of Calanthe striata variety Buttercup, shown by Mrs. **Carl Holmes** (gr. Mr. W. J. Penton), The Node, Welwyn. The specimen shown was wintered in a cold frame, and had on several occasions been severely frozen, yet it was in fine, healthy condition, and bore a tall, slender spike of quaint, bright yellow blooms. Calanthe striata is a native of Japan, and the variety Buttercup is a distinct improvement on the type, both the sepals and petals being yellow in colour.

A well-grown specimen of Cirrhopetalum Collettii, with four inflorescences, was shown by Mr. **Harry Dixon**.

Floral Committee.

Present : Section A.—Mr. Henry B. May (in the chair), Mr. J. F. McLeod, Mrs. Ethel M. Wightman, Mr. H. J. Jones, Mr. William Howe, Mr. J. M. Bridgeford, Mr. M. C. Allwood, Mr. A. E. Vasey, Mr. George Churcher, Mr. D. B. Crane, Mrs. Helen Lindsay Smith and Mr. W. D. Cartwright (Secretary).

Section B.—Mr. Gerald W. E. Loder (in the chair), Mr. Charles T. Musgrave, Mr. E. A. Bowles, Mr. W. J. Bean, Mr. R. C. Notcutt, Mr. F. G. Preston, Mr. George Harrow, Hon. H. D. McLaren, Mr. Clarence Elliott, Mr. W. B. Cranfield, Mr. Reginald Cory, Mr. G. Reuthe, Mr. Mark Fenwick, Mr. E. H. Wilding, Mr. G. Yeld, Mr. Amos Perry, Mr. T. Hay, Mr. R. D. Trotter and Mr. James Hudson; Mr. John Millais and Mr. J. J. Crossfield (visitors) and Mr. N. K. Gould (Secretary).

Awards of Merit.

Anemone Everton Strain.—A bowl of brilliantly coloured flowers was shown. Although the flowers were all of vivid scarlet colouring, with a definite white zone, they approximated both the St. Brigid and the De Caen types. The average individual flower measured five inches across. Shown by Mrs. **Kemmis** (gr. Mr. Chapman), Everton House, Lymington, Hants.

Calceolaria crenatiflora.—In addition to its distinct ornamental value, this perennial species is of interest as being one of the parents of many of the garden Calceolarias. It was introduced from Chiloe in 1831, and the plant now shown was raised from seed collected by H. F. Comber in the Argentine, where he found it growing in moist ground amongst rocks, and also in some exposed places in the forests. The leaves are large, ovate and hairy. The flowers which are borne in plentiful, loose corymbs, are larger than those of Calceolaria corymbosa, three-lobed, yellow and marked with short lines of rosy-carmine on the pouch towards the corolla lid. Shown by Lt.-Col. C. R. **Messel** (gr. Mr. J. Comber), Nymans, Handcross.

Carnation The Lady Seaforth.—This is a splendid white, perpetual-flowering variety. The well-formed flowers are fully four inches across, very fragrant, and the broad petals are uniformly serrated. It appears to be of good habit. Shown by The Lady **Seaforth**, C.B.E., Lydhurst, Haywards Heath, Sussex.

Hippeastrum Baroness Schröder.—This is probably the finest Hippeastrum that has been shown in the hall. The flowers are of immense size, of excellent rounded shape and of glowing rosy-cerise colour. Shown by **Baron Schröder**, Dell Park, Englefield Green, Surrey.

Primula cernua. — An interesting, little Chinese Primula. The leaves are broadly lanceolate, coarsely serrate and slightly hairy. The small, semi-pendulous flowers are produced in rounded clusters on graceful green stems. They are of dark blue-purple colour without and paler within. Shown by **Charles** T. **Musgrave**, Esq., Hascombe Place, Godalming.

Primula Menziesiana. — This little blue Primula was collected by Cooper in Bhutan, Himalayas, and has been grown in a cold frame. The small, green leaves are entire and regularly serrated. The small flowers are produced on slender, mealy stems about eight inches high, and spring from small green bracts edged with white. The flowers are of dark blue colour with paler interiors. Shown by Mr. R. C. **Notcutt**.

Rhododendron Anne.—A very handsome variety raised by crossing R. Thomsoni with an unknown hybrid. Although of delicate appearance, it is said to be quite hardy, the flowers remaining undamaged when other sorts have been blackened by frosts. The trusses are large and shapely, and the individual flowers are widely expanded and of rich pink shades. Shown by Lt.-Col. C. R. **Messel**.

Rhododendron K.W. 6301.—The award to this plant is subject to its being named. A goodly pan of very dwarf plants, only a few inches high, was shown. The tiny, spathulate leaves are not more than three-quarters-of-an-inch long, dark green above and greyish below. The flowers, which were usually solitary, are relatively very large, being nearly three inches across. They expand widely and are prettily flushed with lilac on the outsides. The shoots, stalks and calyces are tinted with reddish-purple. The description which accompanied the plants was of "an aromatic under-shrub, forming tussocks on wet gneiss cliffs facing north." Unfortunately, this desirable species is not hardy, for we were informed that the flower buds become killed by frosts. Shown by Sir **John Ramsden**, Bt., Bulstrode, Bucks.

Groups.

Immediately inside the hall, Messrs. **Blackmore and Langdon** arranged a splendid group of Schizanthus Blackmore and Langdon's strain. The many plants which were growing in relatively small pots illustrated first-rate cultivation and a most desirable strain. This exhibit included many beautiful colours, especially of deep rose shades.

In a circular floor group Messrs. **Sutton and Sons** displayed equally admirable plants of Nemesias. The many plants were set out in rays of distinct shades of colour and their names well illustrated their colours. The chief were Scarlet, Rich Orange, Blue, Cherry-red, Rose-pink and White.

The corner space by the Tea Annexe was well filled by Mr. **Alfred Dawkins** with excellent plants of the large-flowered, greenhouse Calceolaria. The many especially well-grown plants showed very desirable colours. At the other end of the hall, Messrs. **Stuart Low and** Co. had a pleasing group of standards of Callistemon speciosus, bearing many of its bottle-brush-shaped scarlet inflorescences, Calla Elliottiana and Mimosas.

Goodly groups of greenhouse Carnations were arranged by Messrs. **Stuart Low and** Co., Messrs. **Allwood Bros.** and Messrs. C. **Engelmann, Ltd.** Roses of good quality were staged by Mr. **Elisha Hicks**, while Messrs. W. **Cutbush and Son**, Mr. J. H. **Pemberton** and Messrs. F. **Cant and** Co. had graceful groups of the Polyantha varieties. Messrs. L. R. **Russell, Ltd.**, had a small collection of Anthuriums, Begonia Rex and other types. Mr. G. H. **Dalrymple** set up an admirable collection of his coloured Freesias and several good varieties of Primula pulverulenta.

Flowering shrubs provided graceful groups. Messrs. L. R. **Russell, Ltd.**, grouped Cherries, Brooms, Azaleas and Japanese Maples. Mr. R. C. **Notcutt**, had several large specimens of Pyrus Malus purpurea, Japanese Cherries, Azaleas, Fremontia mexicana and Rhododendron hippophaeoides. Messrs. R. **and** G. **Cuthbert** displayed a good group of standard Japanese Cherries over a groundwork of blue Hydrangea Hortensia.

There were many exhibits of rock gardens and alpines. Near the entrance, Mr. **Clarence Elliott** had an extensive and well arranged rock garden exhibit with a central pool. Well-placed, dark green Conifers gave an impression of permanence, and the various flowering plants included Meconopsis integrifolia, Gentians, Aubrietias, Saxifrages and Narcissi.

On the tabling, Messrs. **Waterer, Sons and Crisp** had a pleasant arrangement of Rhododendron myrtifolium and R. Waterer's Hybridum with alpines. Mr. **Stephen Sims** had Conifers and alpines. Messrs. J. **Cheal and Sons** grouped flowering Cherries, Ribes splendens and alpines, and also showed several vases of a dazzling scarlet, small decorative Dahlia named Tipsy. In a small rock garden, Messrs. **William Wood and Son** planted Aubrietias, Daphne Cneorum and Primulas. Messrs. **Bakers** showed Lupins, various alpines and Japanese Maples. In a boldly arranged rock garden, Mr. **Gavin Jones** planted Gentians, Primulas and suitable Conifers. Profusely flowered bushes of Genista hispanica and Erica Veitchii were planted by Messrs. **Jeans and Trowbridge**, in their rock garden.

The pretty Japanese Azaleas were effectively planted by Messrs. **Maxwell and Beale**, while Messrs. **Pulham and Son** placed alpines in their sandstone rock garden, and Messrs. J. **Robinson and Son** used double Daisies, Violas and alpines with taste and skill. Trusses of Rhododendrons, standard Laburnums and Acacias were associated with other shrubs and various alpines by Mr. G. **Reuthe**. In addition to flowers of the vivid Anemone fulgens and Anemone Blue Gown, Mr. F. G. **Wood** showed Anemone viridiflora and the tiny Rosa Rouletti. Messrs. M. **Prichard and Sons** planted Anemone fulgens Aldboroughensis and Ceanothus rigidus in their rock garden, while Messrs. B. **Ladham, Ltd.**, used various Primulas and Polyanthuses, Double Daisies and Saxifrages.

Sedums and Saxifrages were effectively used by Messrs. **Tuckers**. The **Central Garden Supplies** had Forget-me-nots and Primroses of good strains, Daphne Cneorum and Violas. Messrs. W. H. **Rogers and Son** showed Japanese Azaleas, Daphne Cneorum and alpines. Messrs. **Cashburn and Welch** grouped Gentiana verna, Gentiana acaulis and Primulas in a well designed rock garden. Miss C. **Christy** showed Polyanthuses, Gentians and Saxifrages.

There were several very good exhibits of Polyanthuses and Primroses. The rich yellow variety Barrowby Gem and the vigorous Polyanthus David Neave were selected for trial at Wisley. Under the clock, Messrs. **Henry Morse and Son** had a good exhibit of the latter variety. Messrs. **Stark and Son** showed many plants of Ryburgh Tangerine, a splendid free-flowering Polyanthus. Mr. G. W. **Miller** staged many good Polyanthuses and several plants of the old favourite Laced Polyanthus. Mr. R. N. **Rogers** set up a goodly batch of Primrose Barrowby Gem. Miss **Flora Hardy** showed double and single Primroses. Mr. B. Pinney also showed Primroses and Messrs. Reamsbottom and Co. had an exhibit of their showy Anemones.

Narcissus and Tulip Committee.

Present : Mr. E. A. Bowles (in the chair), Mr. W. Cuthbertson, Miss E. Willmott, Mr. P. R. Barr, Sir Daniel Hall, Mr. F. H. Chapman, Mr. W. B. Cranfield, Mr. G. Churcher, Mr. F. A. Secrett, Mr. W. Poupart and Mr. A. Simmonds, Secretary.

Three Narcissi and two Tulips were shown before this Committee, but none was considered worthy of award.

Groups.

Next to their collection of Narcissi, Messrs. D. Stewart and Son staged a small group of Tulips of good quality, included amongst which were Fra Angelico, Psyche, and fine vases of Sweet Lavender, a rich, purplish-rose Darwin variety. Of cottage Tulips, the best were Hector, the yellow Mrs. Hogg, Bouton d'Or, and Artemis ; while other early-flowering sorts were the double scarlet Vuurbaak ; Pink Beauty, the brilliant Coleur Cardinal, and Prince of Austria. There were also good representations of such species as T. Batalini and the orange-scarlet T. linifolia. Messrs. Stewart's collection of Narcissi included fine blooms of the double Poetaz Cheerfulness, Primrose Phoenix, Red Beacon and N. odorus rugulosus.

Another small group of Narcissi was staged by Mr. G. W. Miller, the most conspicuous varieties being Inglescombe and Holland's Glory, two double Incomparabilis sorts ; Lord Lister, Purity and Duke of Bedford, among the leading Trumpet varieties were very showy, and Prince Fushimi was also noteworthy.

Messrs. R. H. Bath, Ltd., staged an admirable group, the majority of which were unnamed seedlings ; of those which bore names there were fine specimens of Dragoon, the richly-coloured Red Guard, and Inglescombe ; while of the Poetaz section, Matthew Arnold, Minnihaha, Fair Lady and Virgil were good examples.

The bank of blooms arranged by Messrs. Barr and Sons consisted of a large selection of varieties. Among those of the Poetaz section were Millie Price, Ringdove, Ashgard, Iliad and Herrick. Snowsprite, a beautiful double white Leedsii was well shown, while John Evelyn, Abelard, and Fantin, a giant golden-trumpeted variety ; also Indian Chief, a double Incomparabilis, were very prominent. Fleur, a beautiful Incomparabilis variety, was extremely attractive.

The group staged by Mr. J. W. Barr contained fine blooms of Red Gauntlet, Scarlet Frill and Golden Apricot, while the large-trumpet section was represented by Nero, Noblesse and Cleopatra.

Fruit and Vegetable Committee.

Present : Mr. C. G. A. Nix (in the chair), Mr. E. Beckett, Mr. E. Harriss, Mr. J. Wilson, Mr. W. Poupart, Mr. A. Poupart, Mr. W. H. Divers, Mr. A. Bullock, Mr. G. Tinley, Mr. J. Cheal, Mr. A. C. Smith, Mr. C. H. Pearson, Mr. H. Prince, Mr. W. Giles, and Mr. A. N. Rawes, Secretary.

There was no exhibit of interest before this Committee.

NATIONAL AURICULA AND PRIMULA.

April 24 and 25.—The Floral Meeting of the Southern Section of this Society was held in conjunction with the R.H.S. meeting on the above dates, and although the number of exhibits was very limited, the quality of the blooms spoke well for the skill of the cultivators of this popular old garden subject. Most of the classes received entries, although in several instances these were confined to one, while the only non-competitive group was that arranged by Mr. J. Douglas, which consisted of many fine pot-grown specimens, a large number of which were unnamed seedlings. Among the most notable varieties were King George, a coppery-red Auricula with a golden eye ; Gordon Douglas, The Dawn, Green Vale and Chamois.

Competitive Exhibits.

In the class for twelve Auriculas, dissimilar, Mr. James Douglas won the first prize with a collection that displayed a remarkable range of colours ; it included Bookham Green, a green-margined variety, which was adjudged to be the premier Show Auricula of the meeting.

Mr. Clive Cookson was first in the class for six Auriculas of different shades, one of which was Lord Steyne, with five large, velvety-crimson white-eyed blooms ; he also secured the first prize for the best self-coloured Auricula, with Blue Lady, a rich purple variety. In the class for four distinct Auriculas, Mr. Hewitt Pitt was first with good show varieties and he was also successful in the class for two dissimilar Auriculas, with two fine seedlings, one of a pale primrose shade and the other a deep velvety-crimson variety.

Mr. Clive Cookson was successful in the single specimen classes for green-edged and grey-edged Auriculas ; in the class for white-edged specimens Mr. H. Pitt was the only exhibitor. For seedlings, first prizes were awarded to Mr. C. Kirch, who showed a fine yellow self variety, and to Mr. C. Cookson, whose silvery-grey, edged seedling was very attractive.

The James Douglas Memorial Challenge Cup, for the best exhibit of six alpine Auriculas, was awarded to Mr. C. Cookson, who showed Vincent, a rich velvety-purple variety ; Argus, with magenta flowers that have yellow eyes ; Queen Mary, Picotee, and Aga Khan, a bright crimson Auricula.

Other first prizes secured by Mr. Cookson were for a collection of four Show Auriculas, with good specimens of George Lightbody, General Gordon and Town Guard ; for six Fancy Auriculas, included amongst which was Caprice, that was considered the premier Fancy Auricula in the show ; and for the best single specimen Fancy Auricula with Roll's Fancy.

Mr. J. J. Keen showed a number of fine seedling alpine Auriculas and secured several first prizes. Croesus, a deep crimson variety with a golden-yellow eye was of great merit, and other sorts that he staged included Joachim, and Lys, a bright crimson Auricula with a golden centre, that was awarded a First Class Certificate.

Mr. James Douglas won the first prize for the best twelve distinct alpine Auriculas ; included amongst his collection were fine specimen plants of the velvety-crimson Fearless ; the deep purple, white-eyed Prince Tyne, and Gordon Douglas ; while Mr. C. Kirch received the premier award in the class for four distinct alpine Auriculas, with good examples of Glow ; Kaffir, a deep crimson variety with a yellow eye ; Leonard, a purple-flowered sort ; and Commander ; while in the section for two distinct alpine Auriculas, Mr. Clifford Burton was the only entrant, with Argus and Robert Burns.

In the section for four Primulas, including no fewer than two distinct species or well-marked varieties, Mr. C. Kirch was placed first. He showed good specimens of Primula Forrestii, P. viscosa cynoglossifolia and P. Sieboldii. Mr. G. W. Miller was successful in the class for six Polyanthuses with fine, large-flowered specimens of various shades of cream, yellow, red and crimson.

Mr. Miller also secured first prizes for a specimen Polyanthus with heavy heads of purplish-red blooms ; for six distinct Primroses, which were of several colours ; for a single specimen Primrose, deep crimson in colour ; and for six double Primroses, which consisted of well-flowered plants of violet, cream and red sorts.

NORFOLK AND NORWICH HORTICULTURAL.

The above Society held its Spring Show on April 12, 13 and 14. The large class for thirty-six distinct varieties of Narcissi and Daffodils attracted three entries, the first prize being secured by Captain Sandys-Winsch, Brundall, with a magnificent collection of the leading varieties in commerce. The second prize collection, from the Hon. Mrs. Petre, Westwick, included a bloom of a new Incomparabilis seedling named Butterpat, which was awarded a Gold Medal. Most of the smaller classes were keenly contested ; Narcissi were used extensively in the vases, baskets and table decorations, which were very pleasing and tastefully arranged.

Among the miscellaneous cut flowers, three fine spikes of Rhododendron Nuttalli shown in a collection of flowering shrubs by Hugh Warmold, Esq., East Dereham, were greatly admired, while the bunches of Magnolia Kobus, Rhododendron Dr. Stocker and Osmanthus Delavayi exhibited by J. H. Christie, Esq., M.P. (gr. Mr. S. High), Framingham Manor, were excellent.

Mrs. H. J. Copeman (gr. Mr. J. Mitchell), Newmarket Road, Norwich, exhibited some fine plants of herbaceous Calceolarias, profusely covered with flowers. She also secured all the first prizes in the several sections for Primulas, and received a Silver-gilt Medal for a non-competitive collection.

G. H. Gurney, Esq. (gr. Mr. F. J. Endersley), Keswick Hall, was first for well-grown plants of Cyclamens.

A noteworthy exhibit was a seedling hybrid Primula-Polyanthus, shown by Mr. Frank Neave, Lingwood, Norwich. The flowers are bold, of a striking crimson shade, and most profuse ; it is a splendid bedder. It was awarded a Certificate of Merit.

In the non-competitive section, Messrs. Daniels Brothers, Ltd., staged banks of Narcissi flanked with hybrid Primulas, while Messrs. Allens had a good display of Roses. Messrs. Bakers exhibited rock plants and shrubs, and Mr. G. Miller, bulbous flowers, Primroses and other plants. Mr. H. Prins showed a bold mass of Narcissi.

A very fine group of Roses, growing in pots, was staged by an enthusiastic amateur, Dr. G. Deacon, of Brundall.

BRITISH MYCOLOGICAL.

A meeting of the British Mycological Society was held recently at University College, London, when Dr. E. J. Butler, Vice-President, presided.

The first paper was by Professor E. S. Salmon and Mr. W. M. Ware on "Two Downy Mildews of the Nettle." The species Peronospora Urticae, Caspary—first described by Berkeley in 1846 as Botrytis Urticae (Lib. MSS.)—produces zoospores, and is referable to the genus Pseudoperonospora. This species has an oval, minutely apiculate conidium, and occurs commonly on Urtica dioica, and less frequently on U. urens. In 1863 de Bary described a true species of Peronospora, germinating by means of a germ tube, and having a conidium broadly ovoid or subglobose, non-apiculate and very obtuse at the apex. De Bary, misled, apparently, by some drawings sent by Berkeley to Caspary, applied the name Peronospora Urticae to his fungus, and this has been followed by all mycologists on the continent. The authors propose to rename this species, which has been found up to the present in this country, as well as on the continent, on U. urens only. The herbaria at the British Museum and at Kew have been consulted and the Exsiccati examined to determine which of the two species has been sent out under the name Peronospora Urticae. Certain biological observations were recorded with respect to the systematic invasion of U. urens by the new species, based on field work, and on inoculation experiments.

Afterwards Dr. W. R. I. Cook gave an account of a joint research with Dr. E. J. Schwartz on the life history and cytology of a new species of Olpidium found in the roots of Veronica Beccabunga. The zoospores enter the epidermal cells of the root by means of a germ tube, and may become active again. On coming to rest they round up and form a sporangium. Usually if two are present in the same host cell they migrate towards one another, and the contents of the smaller pass into the larger one, and the nuclei fuse. Nuclear division then occurs, and the zoosporangium increases in size and thickens its walls. Where no fusion occurs the sporangium grows and nuclear divisions take place, resulting in a zoosporangium which differs from that produced sexually in having a thin wall. At maturity the contents of both types of zoosporangia divide up to form uninucleate zoospores, which remain enclosed within the zoosporangia for some time. The zoospores are liberated from the thin-walled zoosporangia by the bursting of the walls; from the thick-walled ones, by short exit tubes which rarely penetrate the wall of the host cell. The zoospores either make their way to the exterior or passing into an adjacent host cell may there form fresh sporangia. Nuclear division is always mitotic.

The remainder of the session was occupied by a symposium on the nomenclature of strains and a discussion thereon. The contributors to the symposium were Dr. G. G. Hahn, who considered the different forms of Phomopsis occurring on Conifers; Dr. W. Brown, who treated saltations as they are seen in cultures of Fusarium; Dr. W. B. Brierley, who described his results in Botrytis cinerea and the sultants recorded by Dr. F. Chodat in Aspergillus flavus and Phoma alternacearum; and Dr. H. Wormald who dealt mainly with the Sclerotinias and their Monilia forms occurring on fruit trees. The contributions were each of great interest in putting forward the views of workers on special problems, but opinion was divided regarding the advisability of attempting to precise the results obtained by adopting a standardised system of nomenclature. The discussion, however, helped greatly towards showing that the term "strain" as used by mycologists, includes several different concepts, and the necessity for closely distinguishing between them.

ORCHID CLUB.

At the exhibition meeting, held on April 20, there was an extensive and brilliant display of Odontoglossums, Odontiodas and Dendrobiums, together with many rare spring-flowering species.

Diploma of Merit.

Dendrobium Renown var. Carmen.—A fine, deeply-coloured variety of this well-known hybrid, having very broad sepals and petals. Shown by F. T. Paul, Esq.

Groups.

Sir William Thom (gr. Mr. Williams), exhibited a selection of Odontoglossums and Odontioda hybrids, among which were several promising seedlings and a fine variety of Odontoglossum Felicia bearing a long spray of twelve, dark-coloured flowers; and A. T. Cussons, Esq. (gr. Mr. Dalgleish), had a finely-arranged group, including Odontioda Dores, a very fine form of O. Brilliant, and O. Lambeauiana; Lycaste Mary Gratrix; the pretty Bifrenaria Harrisonae, and several Miltonias, including M. Hyeana magnifica.

Dr. Craven Moore (gr. Mr. Gilden) staged a magnificent group of first-class Odontoglossums and Odontiodas, all bearing long, heavy spikes of well-developed blooms. The centre of this fine group was occupied by a wonderful plant of Selenipedium macrochilum in a ten-inch pot, bearing three spikes and ten fully-developed flowers. A Cultural Certificate was awarded to the grower, Mr W. Gilden. Among the Odontoglossums were large plants of Princess Mary, Wodin and tentaculatum, and the Odontiodas included good varieties of O. Brilliant, O. Joan and O. Brenda. Mrs. Hardy sent a few well-grown Dendrobiums.

Sir John Rutherford, Bart. (gr. Mr. Lupton), exhibited a few select Orchids, including Brasso-Cattleya Cliftonii magnifica, B.-C. Queen Alexander; and Laelio-Cattleya Bella alba; and F. T. Paul, Esq. showed a few Odontoglossums and the distinct Dendrobium Renown var. Carmen.

B. J. Beckton, Esq., (gr. Mr. Stewart) staged an extensive group of rare species, including Masdevallia O'Brieniana, known as the Pheasant in the Grass Orchid, M. ludibunda, with deep, rose-coloured sepals and yellow tails, and the very rare M. Estradae. Polystachia paniculata, with its neat panicles of small, bright orange blooms; Epidendrum Sceptrum, and numerous others, including the quaint Zygopetalum graminifolium, were all well shown in this interesting exhibit.

Obituary.

C. J. Lucas.—We regret to learn of the death of Mr. C. J. Lucas, of Warnham Court, Horsham, on April 17, in a London Hospital, after an operation, at the age of seventy-five. Mr. Lucas was Vice-Chairman of the R.H.S. Orchid Committee, and at the meeting of this Committee on April 24, a touching reference was made to his death. A resolution of condolence and appreciation was moved by the Rt. Hon. Lord Lambourne, seconded by Sir Jeremiah Colman, Bt., and supported by the Hon. H. D. McLaren.

THE LATE FRANK READER.

Frank Reader.—It is with the sincerest regret that we record the death of Mr. Frank Reader, who passed away at his Croydon home last Sunday afternoon, within a week of his sixty-seventh birthday. As our readers are well aware, it was only so recently as the end of last year that Mr. Reader retired from his long service as Cashier of the Royal Horticultural Society and that over a very long period he was far more than Cashier. It is not too much to say that the Society owes much of its present great prosperity to the energies and exceptional personal qualities of Mr. Reader, who never spared himself in the service of the great Society whose welfare he had so much at heart. During his all too short retirement Mr. Reader suffered greatly from an incurable malady, but we are glad to know that the end was peaceful. Last week's *Gardeners' Chronicle* contained an account of the presentation to him of the testimonial which was subscribed by his many horticultural friends, and in the issue of December 17, 1927, there appeared an appreciation of his work, on his retirement We tender our deepest sympathy to Mr. Reader's family in their bereavement. Kind-hearted, lovable Frank Reader is no more, but the pleasant memories of him and the good work he did will remain with us evermore.

H. T. Mason.—It is with profound regret that we learn of the decease, on Saturday, April 21, from pneumonia, of Mr. H. T. Mason, following influenza. Mr. Mason belonged to a family which has for many generations followed the pursuit of the growing of fruits, vegetables and flowers for the London market, but his life was not spent solely in the pursuit of business on his own account. Since its inception, he was an active member of the Committee of the British Florists' Federation, and his word, backed by long experience and sound judgment, invariably carried weight in the settling of the various and often extremely difficult problems which have come before this Committee, at the meetings of which there was no more regular attendant than Mr. Mason. His appointment last year as President of the British Florists' Federation was, in itself, an expression of the deep regard in which he was held by his fellow members. Mr. Mason was also an enthusiastic member of the British Carnation Society; in 1926 he was the Chairman of its Committee and was its President for 1927. His activities were not confined solely to the interests of horticulture, for he was for twelve years a member of the Hampton Urban District Council. Now he has passed on, and the gap that he has left will not easily be filled We join with his family and innumerable friends in mourning the loss of a fine personality.

ANSWERS TO CORRESPONDENTS.

Aster Seedlings.—*S. B.* These are attacked by various "damping off" fungi, which usually indicate conditions which are too moist and warm, and insufficient ventilation. When sowing and pricking out the seedlings treat the soil with Cheshunt Compound. If this fails, the soil should be steamed or baked.

Chrysanthemum Leaves for Examination.—*G. F. W.* No insect or fungous parasite could be found on the small specimen marked No. 1, but the damage looked very much like that caused by frost. If the whole plant is affected in this way possibly a soil parasite such as Verticillium Dahliae is present, but we cannot be certain of this from the poor specimen sent. The other specimen was also insufficient to make an adequate diagnosis. From the piece sent, faulty cultural conditions might be the cause of the apparent variegation.

Cucumbers Shrivelling.—*C. H. L.* Cucumber plants usually produce more fruits than they can mature, and the proportion of matured fruits depends very largely upon the constitution of the plants. If your Cucumbers produce a large proportion of shrivelled fruits, it is a sign of poor constitution, which can probably be traced to root injury. To overcome the trouble you should dry out the beds to encourage root development, cut off all the small fruits, and give a little ventilation. At the end of a week you should close down the houses, top-dress the beds with stable manure and soil, and give them a good watering. A little later, a top-dressing of dried blood and superphosphate would be beneficial.

Names of Plants.—*E. J. B.* Rhododendron racemosum, a Chinese species first introduced by Père Delavay. He sent seeds to the Jardin des Plantes, Paris, from whence seedlings were brought to Kew Gardens in 1889. The species is widely distributed in western China, and varies considerably in the habit and colour of the flowers. The form you sent is a very good colour, and presumably raised from seeds collected by Forrest. R. racemosum is one of the easiest Rhododendrons to raise from seeds. Sown in a cool greenhouse the young plants often produce a few blooms within two years of planting.—*F. D. and Co.* 1, Ribes alpinus (Alpine Currant); 2, Lycium chinense (Chinese Box Wood); 3, Salix vitellina (female tree).—*C. H.* One of the many double varieties of Tropaeolum majus, which occur from time to time and have received garden names. Your specimen appears to be the variety known as "Ball of Fire."

Weeds in Garden Path.—*Penarth.* Slightly moisten the path and pull the weeds up, or use one of the weed-killers advertised in our columns.

Communications Received.—J. C. W.—G. H. C.—J. F.—G. R.—E. A. B.—L. J. C.—W. J. F.—H. A. S. S.—S. J.—J. C. B.—L. A.—A. W. D.—W. H. S.—A. S.—W. B.—B. P. M.—J. C. and C.—J. A. J.—D. C.—E. B.—G. B.—G. A. J.—J. W.

MARKETS.

COVENT GARDEN, Tuesday, April 24th, 1928.

Plants in Pots, etc.: Average Wholesale Prices.

(All 48's except where otherwise stated).

	s. d.	s. d.
Acacia Drummondi, 48's, per doz.	18 0	24 0
Adiantum cuneatum, per doz.	12 0	15 0
—elegans	12 0	15 0
Aralia Sieboldii	9 0	10 0
Araucarias, per doz.	30 0	40 0
Asparagus plumosus	12 0	18 0
—Sprengeri	12 0	18 0
Aspidistra, green	16 0	60 0
Asplenium, doz.	12 0	18 0
—32's	24 0	30 0
—nidus	12 0	15 0
Boronia megastigma, 48's, per doz.	18 0	24 0
Cacti, per tray, 12's, 15's	5 0	7 0
Cinerarias	15 0	18 0
Crotons, doz.	30 0	45 0
Cyrtomiums	10 0	25 0
Erica Wilmoreana, per doz.	27 0	30 0
— coccinea, 48's, per doz.	12 0	15 0
— Cavendishiana 48's, per doz.	24 0	30 0
—persoluta, 48's, per doz.	24 0	30 0
— — 60's, per doz.	15 0	18 0
Genistas, 48's, per doz.	15 0	18 0
Marguerites, 48's, per doz.	18 0	21 0
Nephrolepis in variety	12 0	18 0
—32's	24 0	36 0
Palms, Kentia	30 0	48 0
—60's	15 0	18 0
Pteris in variety	10 0	15 0
—large, 60's	5 0	6 0
—small	4 0	5 0
—72's, per tray of 15's	2 6	3 0
Roses, Polyantha 48's, per doz.	21 0	30 0
Spiraea, white, 48's, per doz.	18 0	21 0
—pink, per doz.	21 0	24 0

Cut Flowers, etc.: Average Wholesale Prices.

	s. d.	s. d.
Adiantum decorum, doz. bun.	15 0	18 0
—cuneatum, per doz. bun.	10 0	12 0
Anemones, St. Brigid, per doz. bun.	3 0	4 0
Arums (Richardia), per doz. blooms	4 0	5 0
Asparagus plumosus, per bun. long trails	2 6	3 6
—med. sprays	2 0	2 6
short ,,	—	1 0
—Sprengeri, bun. long sprays	2 0	2 6
med. ,,	1 0	1 6
short ,,	0 6	1 9
Camellias, 12's or 18's, per box	2 6	3 0
Carnations, per doz. blooms	2 6	4 6
Croton leaves, per doz.	1 9	2 6
Daffodils, per doz. bun.—		
—Emperor	5 0	6 0
—Barrii conspicuus	3 6	4 0
—grandis	5 0	6 0
Ferns, French, per doz. bun.	10 0	12 0
Forget-me-nots, per doz. bun.	8 0	10 0
Gardenias, per doz. blooms	6 0	9 0
Heather, white, per doz. bun.	—	12 0
Hydrangea, white, per doz. bun.	36 0	48 0
— pink, per doz. bun.	24 0	30 0
Iris, per doz. blooms—		
—blue	2 0	2 6
—white	2 6	3 0
—yellow	2 6	3 0
—mauve	2 0	3 0
Ixia, scarlet, per doz. bun.	5 0	6 0
—mixed, per doz. bun.	4 0	5 0
Lilac, white, per doz. sprays	6 0	9 0
—mauve, per doz. spikes	6 0	9 0
Lilium longiflorum, long, per bun.	2 6	3 0
— —short, doz. blooms	2 6	3 0
Lily-of-the-Valley, per doz. bun.	24 0	36 0
Marigolds, per doz. bun.	3 0	4 0
Myrtle, green, per doz. bun.	1 6	2 6
Narcissus ornatus, per doz. bun.	2 6	3 6
—Elvira, per doz. bun.	3 0	3 6
—Flame, per doz. bun.	5 0	6 0
—Poetaz, per doz. bun.	3 0	4 0
—choice varieties	5 0	6 0
Orchids, per doz.		
—Cattleyas	21 0	30 0
—Cypripediums	8 0	10 0
Pelargoniums, white, per doz. bun.	9 0	10 0
Primroses, per doz. bun.	1 6	2 0
Roses, per doz. blooms—		
—Butterfly	4 0	6 0
—Columbia	4 0	5 0
—Golden Ophelia	3 6	4 0
—Richmond	3 6	5 0
—Aaron Ward	2 6	3 0
—Roselandia	3 6	3 6
—Hoosier Beauty	4 0	5 0
—Molly Crawford	3 0	5 0
Smilax, per doz. trails	6 0	7 0
Stephanotis, 72 pips	4 0	4 6
Sweet Peas, various, per doz. bun.	6 0	18 0
Tulips, per doz. bun.—		
— single, white	24 0	30 0
— — red	18 0	24 0
— — pink	18 0	24 0
— — mauve	21 0	24 0
—Darwins	24 0	30 0
— — yellow	27 0	30 0
Violets, per doz. bun.	2 0	4 0
Wallflowers, per doz. bun.	4 6	8 0
French flowers—		
—Allium (Star), per doz. bun.	2 6	3 0
—Gypsophila, white, per doz. bun.	4 0	5 0
—Marguerites, yellow, per doz. bun.	3 0	3 6
—Stock, double white, per doz. bun.	4 0	5 0
—Violets, Parma, double, per bun.	3 0	4 0

Remarks.—Home-grown Daffodils are now practically finished, the majority of the blooms which arrived during the past week having suffered from the recent frosts and unfavourable weather conditions. Similar conditions apply to Narcissus ornatus, but the first arrival of Poeticus varieties have already come to hand, and supplies should increase almost daily. N. Glory of Lisse and N. Horace have been received from the Spalding district in good condition. Good Darwin Tulips of Bartigon, Clara Butt, Elizabeth, Wm. Copland and Pride of the Netherlands are much firmer in price. Outdoor blooms are also arriving, but show the effects of bad weather; but those arriving from Guernsey are in a better condition. Irises are now arriving in first-class condition and prices are on the down grade. Carnations reached the prices realised during Easter week and the supplies were below the requirements. Roses also advanced in price on Friday and Saturday last, red and white varieties being mostly in demand for the 23rd (St. George's Day), but prices this morning were lower. The latest arrivals in the cut flower department are Gladiolus The Bride, Stephanotis and a few blooms of Gerberas from Guernsey. English Violets and Freesias are now finished. In the French department, double white Stocks, Gypsophila, yellow Marguerites and Irises, cut in bud, have been mostly in demand.

Vegetables: Average Wholesale Prices.

	s. d.	s. d.
Asparagus,		
—Lauris	1 6	2 0
—Giant	4 0	6 0
—Cavaillon	1 3	1 6
Beans, Madeira, per box	3 0	4 0
—Guernsey, finest, per lb.	1 3	1 6
—Worthing	1 3	1 6
Beets	5 0	6 0
Carrots, New, doz. bun.	7 0	8 0
Cauliflowers, French, per crate	10 0	12 0
—Cornish	10 0	12 0
Cucumbers, doz.	3 0	5 0
Endive, Cornish, per doz.	2 0	2 6
Leeks, per doz.	2 0	2 6
Lettuce, English	1 6	2 0
—French, round, per doz.	1 6	2 0
Marrow, Forced, per doz.	6 0	8 0
Mint, forced, per doz. bun.	6 0	8 0
Mushrooms—		
—Cups	2 0	3 0
—Broilers	1 6	2 0
Onions—		
—Dutch	15 0	16 0
—Spanish	18 0	20 0
Parsnips, cwt.	5 0	6 0
Peas, Guernsey, per lb.	1 6	2 6
Potatos—		
—English, cwt.	7 0	9 0
—Spanish, cwt.	24 0	26 0
—Guernsey, new, per lb.	0 4½	0 6
—Azores, new	10 0	16 0
—Canary	14 0	16 0
Tomatos, Canary Islands	14 0	20 0
—English, per lb.	1 3	1 9
Turnips, New, doz. bun.	8 0	9 0

Fruit: Average Wholesale Prices.

	s. d.	s. d.
Apples, English—		
—Bramley's Seedling	7 0	14 0
Apples, American—		
—Newtowns	12 0	15 0
Apples, New Zealand—		
—Cox's	17 0	18 0
—London Pippin	10 0	12 0
—Alfriston	9 0	11 0
—Dunn's	10 0	12 0
—Others	8 0	9 0
Bananas	14 0	25 0
Grapes, English—		
—Hambro, per lb.	4 0	5 0
Grapes, Australian—		
—Colmar	20 0	25 0
—Ohanez	20 0	22 6
—Black Malaga	16 0	18 0
Grape Fruit—		
—Blue Goose	—	42 6
—Jamaica	—	32 6
Lemons, Messina and Palermo, per case	14 0	20 0
—boxes	11 0	15 0
Oranges, per case—		
—Valencia and Denia, per case	18 0	35 0
—Almeria	20 0	32 6
—Jaffa	18 0	19 0
Strawberries, per lb.	7 0	15 0
South African Fruits—		
Grapes—		
—Waltham X.	6 0	10 0
—Raisin Blanc	7 0	10 0
—Henab Turki	9 0	12 0
—White Hannepoot	6 0	10 0
—Red Hannepoot	6 0	10 0
Pears, New Zealand—		
—B. Bosc	6 0	7 0
—Josephine de Malines	7 0	8 0
—Pachham's Triumph	5 6	7 0
Pears—		
—Josephine de Malines	4 6	6 0
—W. Nelis	3 6	6 0
—Beurré Bosc	4 0	7 0
—Doyenné du Comice, per doz.	6 0	10 0
—Glou Morceau	3 0	4 0
Pineapples, per case	27 0	35 0

Remarks.—The general demand in most sections of the market may be termed satisfactory. The recent cold weather was responsible for some slackening off in the enquiry for fruits, but at the time of writing there is a better demand. Fruits from South Africa are again the leading feature, consisting mainly of Grapes and Pears, and on the whole these have sold well. Australian Apples are also very plentiful and quoted cheaper. There are still some good English Bramley's Seedlings available, which continue to meet a firm demand. Hothouse Grapes from Belgium, as well as home-grown supplies are slightly more plentiful. English Strawberries have not been moving so freely, even at lower prices. Other choice fruits available are Peaches, Figs and a few hothouse Cherries. Hothouse vegetables on the market at the moment are French Beans, Peas and New Potatos, all of which are selling moderately well. Tomatos from the Lea Valley and Worthing districts show a gradual increase in quantity. The Cucumber trade is moderately good, but the selling prices are comparatively low, but improvement is looked for with better weather conditions. Mushrooms are a shorter supply and better prices are being realised. Salads have been doing well recently and remain in good demand. New Potatos from various sources are rather on the short side, but heavy shipments of Spanish Potatos are advised as on the way. The old Potato trade is active and prices remain about the same as last week. Asparagus from France is now arriving in in large quantities while a sprinkling of English "grass" has already been marketed.

GLASGOW.

During the past week prices in the cut flower market moved very irregularly. Daffodils were so plentiful that stocks of Barri conspicuus and Ornatus were cleared at the low figures of 6d. to 9d. per dozen bunches. Values, however, made a sharp recovery, and on Friday they were worth 8d. to 9d. for the former, and 1s. to 2s. for the latter variety. Other sorts were also cheaper, even at the highest values for Emperor, 1s. 6d. to 2s.; Sir Watkin, 1s. 6d. to 1s. 9d.; and Poeticus, 1s. 6d. to 2s. Tulips displayed a slightly firmer tendency for good quality flowers; Princess Elizabeth ranging from 10d. to 1s. 3d. for 6's; Bartigon, 8d. to 1s. 3d.; William Copland, 9d. to 1s. 2d.; Double red, 10d. to 1s.; William Saunders and Bouton d'Or, 8d. to 10d.; Parisian White, 9d.; White Swan, 8d.; Murillo, Pride of Haarlem and Prince of Austria, 6d. to 8d.; Madame Krelage, 1s. for 12's; William Pitt (English-grown), 1s. 6d. to 2s.; (imported), 1s. 9d. to 2s. 6d. Blue Irises, extra special, made 3s. 6d. to 3s. 9d.; special, 3s.; ordinary, 2s. to 2s. 9d.; those from Guernsey sold at 3d. to 6d. for 6's. Carnations, red and white, were dearer, at 6s. per dozen; pink, 5s.; and white, 4s. per dozen; while Roses were cheaper, Ophelia, Madame Butterfly, Golden Ophelia and Richmond selling at 5s.; Roselandia, 4s. 6d.; Molly and Mrs. Herbert Stephens, 3s. 6d. Lilium longiflorum made from 2s. 6d. to 3s. per bunch; Arums (Richardias), 3s. to 4s. per dozen; Sweet Peas, 1s.; Lily-of-the-Valley, 2s. to 2s. 6d. per bunch; Lilac, 1s. 6d. to 1s. 9d.; and Anemones, 7d.

Pot plants were in good demand at steady prices. Pink Spiraea sold at 2s. 6d. each; white, 2s.; Mignonette, 2s.; scented Geraniums, 1s.; Marguerites, 2s.; Ericas, Genista, Acacias, Dicentra (Dielytra) and Boronias, 2s. 6d. Bedding plants are now coming in more freely, and Lobelia realised 2s. 6d. per box; Chrysanthemums, 3s.; and Sweet Peas, 1s. per dozen.

The fruit market was quiet and featureless. American Apples were 1s. per case cheaper; Cuban Grape Fruits declined from 27s. to 18s. to 22s. per case; Jaffa Oranges were steady at 17s. to 19s.; South African Pears, 3s. 6d. to 5s. per tray; Colmar Grapes, 11s. to 12s.; English Tomatos, 1s. 9d. per lb.; Guernsey Tomatos, 1s. 8d.

In the vegetable section, imported Potatos, No. 2, made 15s. 6d. per case; Guernsey Beans, 1s. 6d. per lb.; Madeira Beans, 6s. to 8s. per box; Asparagus, 2s. 6d. to 3s. per bunch; Cauliflowers, 6s. to 8s. per dozen; Lettuce, 3s. to 4s.; English Cucumbers, 6s. to 8s.; Mushrooms, 2s. 6d. to 3s. per lb.: and field Rhubarb, 8s. to 12s.

TRADE NOTE.

Messrs. Felton and Sons' annual Staff Ball was held at The Marble Arch Hall, and was even more successful than any of its predecessors. The merry throng on this occasion numbered close upon two hundred, and dancing was kept up until after midnight. In a brief interval, Mr. Felton thanked his staff for their help and interest, and also expressed his appreciation of the fact that so great a number of his old staff were present and that many of them had their wives and husbands with them.

GARDENING APPOINTMENTS.

Mr. G. H. Emmett, previously gardener to the Lord Bledisloe, P.C., at Lydney Park, Lydney, Gloucester, as Gardener to the Lord Desborough, G.C.V.O., Taplow Court, Taplow, Buckinghamshire. (Thanks for 2/6 for R.G.O.F. Box.—Eds.).

Mr. A. Valantine, for the past three years Gardener to W. Malin, Esq., J.P., Overdale, Derby, as Gardener to C. A. Longbottam, Esq., J.P., Forest Hill, Worksop, Nottingham. (Thanks for 1/- for R.G.O.F. Box.—Eds.)

Mr. Henry Burfoot, previously for eight years Gardener at Piper's Corner, High Wycombe, as Gardener to Walter M. N. Reid, Esq., Germains, Chesham, Bucks. (Thanks for 2/6 for R.G.O.F. Box.—Eds.)

ENQUIRY.

Can any reader give information of a plant called the "Norwegian Forget-me-not"? It is described as having blue-green foliage and white flowers. *L. S. A.*

CATALOGUES RECEIVED.

Boulton and Paul, Ltd., Norwich.—Greenhouses.
Allwood Brothers, Wivelsfield Nurseries, Haywards Heath.—Carnations and Dianthus.

Foreign.

A. Grunwald, Wiener-Neustadt, Austria.—Seeds.
Fr. de Laet, Contich-Village-lez-Anvers, Belgium.—General nursery stock.

SCHEDULES RECEIVED.

Peel Park Flower Show.—Exhibition, to be held on Saturday and Monday, August 4 and 6.—Secretary, Mr. J. Richardson, Buile Hill Park, Salford.

Wolverhampton Floral Fête.—Thirty-sixth exhibition, to be held on Tuesday, Wednesday and Thursday, July 3, 4 and 5.—Secretary, Mr. W. J. Maxfield, Town Hall, Wolverhampton.

British Gladiolus Society.—Exhibition, to be held on Friday, August 10, in the Royal Horticultural Hall, Westminster.—Secretary, Mr. A. E. Amos, 10, Bergholt Road, Colchester.

THE
Gardeners' Chronicle

No. 2158.—SATURDAY, MAY 5, 1928.

CONTENTS.

Alpine garden—
- Anemone vernalis... 312
- Arenaria purpurascens 312
- Arnebia echioides ... 312
- Asperula suberosa... 312
- Rubus arcticus ... 312
- Tropaeolum polyphyllum 312

Bulb garden—
- Erythroniums ... 313
- Puschkinia scilloides 313

Characters and testimonials 320
Cultural memoranda—
- Bedding Lobelias ... 319

Fences and fencing, the law relating to ... 316
Flower garden—
- Ipomoea Purga ... 314
- Trachystemon orientale 314

"Gardeners' Chronicle" seventy - five years ago 309
Gooseberry sawfly ... 321
Hardy flower border—
- Sweet Rockets ... 314

Indoor plants—
- Jacobinia pauciflora 314
- Psychotria jasminiflora 314

Law note—
- Merchandise Marks Act prosecution... 319

Leonardslee Gardens, Horsham 309
Lilium nomenclature... 320
Manures for May, garden 319
Obituary—
- Muirhead, G. ... 327
- Tait, W.C, ... 327

Plants of botanical interest 321
Primroses and lime ... 320
Primula, the genus ... 318
Primulas as lime-lovers 312
Pyrus Malus, Russell's Weeper, award to... 321
Reader, the late Frank 321
Richmond's Terrace Gardens, enlarging . 307
Societies—
- British Carnation ... 326
- Ghent Quinquennial Exhibition ... 321
- Midland Daffodil ... 323
- Rhododendron ... 324

Strawberries, failure with... 320
Trees and shrubs—
- Convolvulus Cneorum 314
- Vaccinium Mortinia 314

Vegetable garden—
- Basil 321
- Salsify and Scorzonera 321
- The Chinese Artichoke 321

Violas, a revision of... 315
Week's work, the ... 310
Welsh garden, notes from a 317
Winter, the aftermath of 307
Wisley, notes from ... 316

ILLUSTRATIONS.

Calanthe striata var. Buttercup... 311
Ditch and hedge, plan of a 316
Ghent Exhibition ... 308, 309, 313, 315, 319, 322, 323
Lewisia Tweedyi at Wisley 317

Average Mean Temperature for the ensuing week deduced from observations during the last fifty years at Greenwich, 52.3°.

Actual Temperature.—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London, Wednesday, May 2, 10 a.m. Bar. 29.9. Temp. 55°. Weather, dull.

The Aftermath of Winter.

It is at this time of spring verdure and spring flowers that the damage done by the past winter becomes most evident; for although frosts in some cases are merciful in slaying suddenly, yet in others the evil they do—like that done by men—lives after them. The bare spars and seared foliage of plants injured during the winter are now the more conspicuous in contrast with the vigour of life manifest in those subjects that withstood the winter and rough weather. But although the losses are conspicuous they are, after all, relatively few. That this is so is a tribute to the judgment of the introducers and suppliers of garden plants. In the garden which has provoked these reflections the chief sufferers have been the Cistuses. Strong, well-established plants of Cistus purpureus have been killed outright. Nor is this surprising, for as Mr. Bean warns us, the species "is hardy only through comparatively mild winters." Yet there is something strange about this plant. It undoubtedly exists in two forms, for in the Oxford Botanic Garden "our" form and another grow side by side, and now ours, so to say, has been taken by the frost and the other has been left! Sturdy plants of C. villosus have been killed outright, whereas the hybrid known as Silver Queen has scarcely suffered. Cistus corbariensis and C. crispus have suffered severely. That the former should have been hurt—in some cases mortally—is the more curious in that C. corbariensis is recorded by Bean as having been one of the few survivors of the great frosts of February, 1895. Unlike these species, C. ladaniferus, with less favoured positions in this garden, has escaped unscathed. The capriciousness of the winter's killing is illustrated also by the fact that many other specimens of C. corbariensis and C. crispus have been untouched. Stock-taking of the position suggests that age enters largely into hardiness. Younger plants have, as a rule, survived, older ones have been maimed or killed outright; thus illustrating the adage that of all animals babies possess most vivacity. A like conclusion may be drawn from the fact that whereas large, four-year-old, sheltered plants of Teucrium fruticans, commonly called argenteum, have been killed, cuttings exposed in the frame yard have survived. In this case the loss is not surprising, for this Mediterranean plant is one which, if it rests at all, is in its natural home active and floriferous in winter; what is surprising is that the young plants have retained their leaves as well as their lives. The most curious example of the selective action of frost is presented by Helianthemum formosum and H. ocymoides (algarvense) side by side; alike as Peas in respect of flowers, these species are poles asunder in respect of hardiness. H. formosum was untouched, but H. ocymoides, perhaps because of its less downy and thinner leaves, has been killed apparently outright. Next to the Cistuses the Ceanothus tribe has suffered even when they had a wall sheltering them from the north and north-east winds. A great plant of C. dentatus in the embrasure of the house wall has many dead branches and C. thyrsiflorus has not by any means escaped. Other sufferers now recovering are Spartium junceum, its shoots all grey with death, albeit that its buds are breaking; Santolina viridis, almost bared of its wonderful green leaves; and S. Chamaecyparissus likewise has been made leafless. The Berberises have, on the whole, suffered but little, although some evergreen species have been made deciduous. B. canadensis, ten feet to fifteen feet high, is bare of last year's leaves, so is B. Coryi (subcaulialata ?), and B. Wilsonae, although not bare, has its old leaves bronzed by death. A hedge of Phlomis fruticosa is, as might be expected, a sad sight. It was, of course, tempting providence to plant it in a none too sheltered position. Yet, although many have been killed to the ground, none of the several hundred plants of the hedge have suffered mortally. Some, indeed, are unscathed, which suggests that this noble plant possesses attributes of hardiness with which it is not often credited. It is noteworthy that of these plants most are cuttings from that fine old plant in the Oxford Botanic Gardens, and they, like it, have been hard hit. The others which have been hurt less, or not at all, are seedling plants now five or six years old. These facts convey lessons which it were well to lay to heart. First, that propagation is the means of defying the winter, and second that propagation by seeds is in general better than vegetative propagation. Curiously enough, a small specimen of Desfontainia Hookeri, reputed to be as tender as D. spinosa, has survived the winter without loss of leaf. In another garden situated in the milder county of Hampshire, a long-established specimen of the former species has survived this and many preceding winters, so that this fine plant would appear to be worth growing wherever the climate is a little milder than that near London, where, according to Bean, D. spinosa is not hardy. In the Berkshire garden in which these general observations have been made, Leptospermum scoparium var. Nichollii, with its handsome, dull red foliage, has been unharmed, whereas the Myrtles of the same family alliance, close by, have, as is often the case, had many of their leaves badly damaged by frost. It is worth noting that the soil of this garden, a heavy loam, is rich in potash, and that may account for some survivals, for what is true of vegetables is probably true of shrubs and trees, namely, that potash confers a measure of frost resistance; a fact worthy of notice by those who cultivate gardens in districts which are likely to suffer somewhat hardly from frost. Of Olearias the surprise is that whereas O. macrodonta has escaped almost unscathed, O. stellulata, which generally comes through the winter unharmed, has been cut almost to the ground. O. Haastii, of course, has remained immune, and so has O. nummularifolia. Veronica Hulkeana, with its back to a warm wall, has survived intact, but Clematis Armandi, in a somewhat exposed position, has suffered; one species having been killed outright and another near by killed nearly to the ground. That finest of all hedge plants, Lonicera nitida, has proved its hardiness once more, its leaves, indeed, have at this moment a freshness and grace which make it a delightful background for early-flowering Tulips and the like. The Loquat, Eriobotrya japonica, looks a sorry specimen, quite leafless, but that is more due to a bad position than to tenderness It must be transplanted, if, as its breaking buds indicate it may, it survives the winter. Bamboos, Arundinaria nitida, Phyllostachys nigra and P. aurea have suffered not at all. Another survivor which looks brilliant in the spring sunshine is Senecio Greyii. It has a bad name for hardiness, and in some places lives—or rather, dies—down to its reputation, but in this garden a couple of hundred feet above the Oxford Botanic Gardens, it has proved perfectly hardy during the last seven or eight winters—whereas Mr. Baker, who grows everything that will grow in the Botanic Gardens, says sadly, that it won't do with him. The question which suggests itself from these observations is, might it not be worth while for nurserymen and others to investigate even more systematically than they do the degree of difference with respect to hardiness evinced by seedlings. The Phlomis story told above would seem to indicate a positive answer to this question. Another question: Should not those whose soils—generally the light soils—lack potash, try the effect of a light spring or summer application of kainit or potash salts on those plants which are on the borderline which separates hardiness and tenderness? This, however, opens up another and a larger subject, that of the use of fertilisers for flowering trees and shrubs, which subject, however, must await another occasion.

Enlarging Richmond's Terrace Gardens.—The beautiful Terrace Gardens at Richmond, Surrey, are now being extended by the inclusion of part of the grounds of Cardigan House. The workmen appear to have come across the foundations of the assembly hall which, towards the end of the seventeenth century, was connected with the Richmond Wells.

Frank Reader Testimonial.—Subscribers to this testimonial have received the following letter:—"After deducting expenditure in postages and printing, the Frank Reader Testimonial amounted to £270 0s. 9d. (gross £293 3s. 6d.). It was the wish of the subscribers and the intention of the Committee to entertain Mr. Reader to dinner, and present him with a cheque and a book containing the names of the subscribers to his Testimonial. Unfortunately, owing to Mr. Reader's illness, this pleasant method of making the presentation was impossible; consequently the presentation was made to him, at his home, on Wednesday, April 11, by Mr. George Monro, Mr. William Cuthbertson and Mr. Charles H. Curtis. Yours faithfully, Wm. Cuthbertson (Chairman): Geo. Monro (Treasurer and Secretary). P.S.—We greatly regret to state that Mr. Frank Reader passed away on Sunday, the 22nd inst."

Kew Bulletin.—The third *Bulletin* of Miscellaneous Information, 1928, issued by the Royal Botanic Gardens, Kew, contains a classification of the Australian Asperulas, with complete descriptions of each. The species dealt with are A. conferta, A. scoparia, A. Gunnii, A. pusilla, A. minima, A. subsimplex, A. wimmerana, A. lissocarpa, A. Cunninghamii, A. subulifolia, A. ambleia, A. euryphylla, A. asthenes, A. Charophyton, A. gemella, A. geminifolia and A. arvensis. The new plants from the Andes of Argentina, collected by Mr. H. F. Comber on his second expedition to the Andes, which are described in this *Bulletin*, are Berberis lologensis, Menonvillea Comberi, a white-flowered, sweetly-scented annual; Oxalis Comberi, a perennial with dark green leaves and yellow flowers, lined with red on the outside; Valeriana chionophila, a large, tap-rooted perennial with shiny green leaves, purple stems and pale pink, sweetly-scented flowers; and Calceolaria cymbiflora, a perennial, with orange-yellow flowers, spotted on the insides. It is also stated in this publication that Dr. A. W. Hill, who visited New Zealand recently on behalf of the Empire Marketing Board, has been made an Honorary Member of the New Zealand Institute. Dr. Hill has just returned from his tour to Australasia.

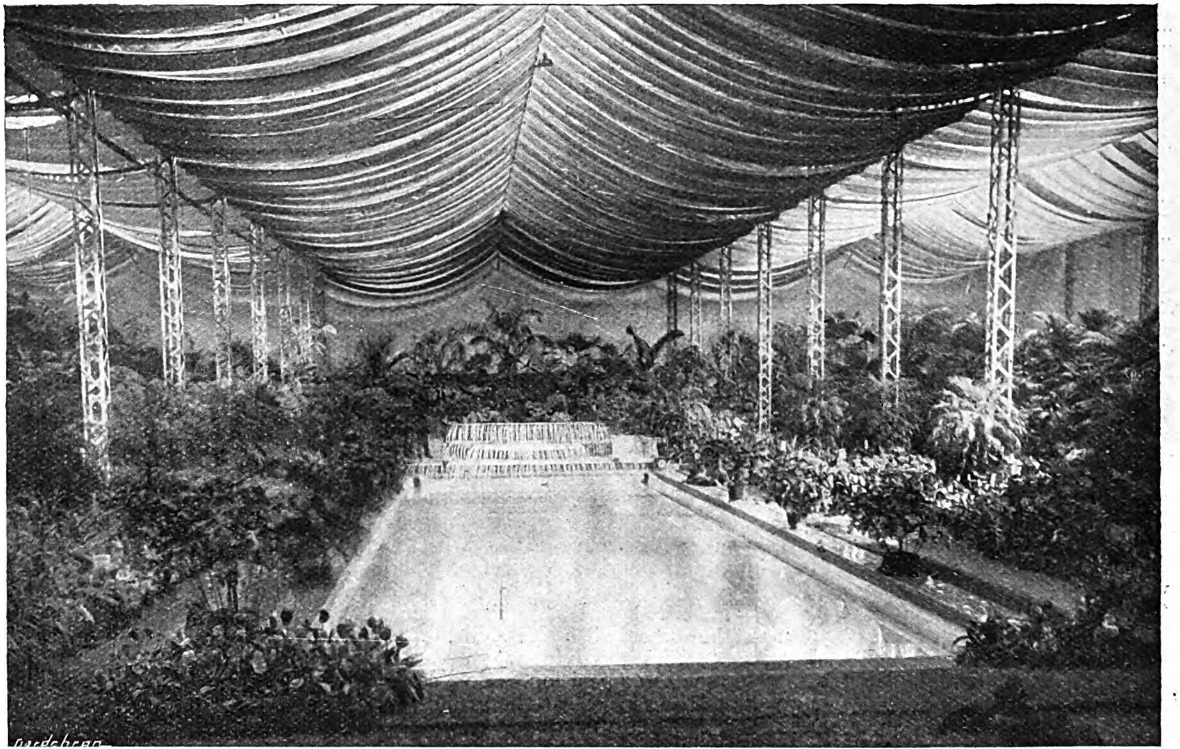

FIG. 146.—GHENT QUINQUENNIAL EXHIBITION: THE BLUE LAGOON WITH THE KING OF THE BELGIANS' SPECIMENS OF MEDINILLA MAGNIFICA ALONG THE SIDES.

(see page 322.)

Plymouth Week, 1928. — To show that Plymouth is not lagging behind in the march of horticultural improvement, a party of horticulturists met for the purpose of considering the advisability of holding a flower show in connection with Plymouth week, to be held from July 9 to July 14. The meeting was presided over by the Mayor, and an attractive schedule was completed and passed for publication. The members of the Show Committee are drawn chiefly from the West of England Chrysanthemum Society, together with the Secretary, Mr. S. Collecott, of 52, Cobourg Street, Plymouth, who has taken over the secretarial duties, and Mr. A. Andrews, the Superintendent of Parks, who was unanimously elected as Chairman. With such experienced men, it is anticipated that a successful show will be the result. The West of England Chrysanthemum Society's Show is fixed for November 6, 7 and 8. Schedules of both shows may be had from the Secretary.

Dunkery Beacon.—In a letter to the *Times*, published on April 27, a correspondent suggests that a fund should be opened for the purchase of this famous landmark and beauty spot of Somerset for the nation. Dunkery Beacon, with an area of seven hundred acres, is to be sold, apparently, and the purchase price is stated to be £2,500; a Somerset lady has already offered to provide a fifth part of that sum if four others will subscribe like amounts, or if the £2,000 is collected by other means.

Legacies to Gardeners.—The late Miss Anne Leah, of The Grange, Teignmouth, bequeathed £150 each to her gardeners, Mr. J. Austin and Mr. E. J. Seagell.—The late Mr. J. Johnson, of Holifast Grange, Erdington, Birmingham, left £100 to his gardener, Mr. Vale.—A similar sum was also bequeathed by the late Mrs. A. F. Hayles, of Ravenshaw, Acock's Green, Birmingham, to her gardener, Mr. H. Clements.

South Lodge Gardens, Horsham.—Dame Alice Godman will open her gardens at South Lodge, Horsham, to the public on Monday, May 21, from 11 a.m. to 7 p.m. A charge of one shilling will be made on behalf of Queen Alexandra's Memorial and other funds.

New Sports Grounds in Dublin.—With the great strides which are being made in Town Planning, it is not surprising to find sports grounds springing up in various areas, but the Iveagh Sports Ground, recently opened by Lord and Lady Iveagh, for the employees of Messrs. Arthur Guinness, Son and Co., the world-famed brewers, surpasses all expectations. It is some thirty-five acres in extent, situated at Crumlin, to the south-west of Dublin, and contains not only a beautifully constructed football and cricket ground, with a magnificent pavilion and stand, but also a fine bowling green, grass and hard tennis courts, hockey grounds and handball alleys. There is a wide ash track around the central ground and spacious banks, effectively screened by shelter trees, for the spectators. Along the boundary fences Privet has been planted, with Poplars at twenty-feet intervals, and around the tennis courts and bowling greens are banks of ornamental and flowering shrubs.

Motor Mechanism of Plants. — Sir Jagadis C. Bose, F.R.S., Director of the Bose Research Institute Station, Calcutta, will deliver a public lecture on "The Motor Mechanism of Plants," at University College (Chemistry Theatre), Gower Street, London, on Tuesday, May 8, at 5.30 p.m. Professor F. G. Donnan, F.R.S., will preside.

Governor-General of Ireland Welcomed.—On April 19 a deputation from the Royal Horticultural Society of Ireland waited on the newly-appointed Governor-General and presented to him an address of welcome. His Excellency has consented to become Vice-Patron of the Society, an office held by different Lords-Lieutenant and the first Governor-Generals and furthermore expressed the hope of furthering the Society's work. The residence of the Governor-General, formerly the Viceregal Lodge, is situated in the beautiful Phoenix Park, which covers one-thousand-seven-hundred-and-fifty-two acres, of which one-thousand-three hundred acres are open to the public. It is famous throughout Europe for its natural beauty, and it commands a splendid view of the wide range of Dublin Hills.

Linnean Society.—The Anniversary Dinner of the Linnean Society of London will be held at the Criterion Restaurant, Piccadilly Circus, on Tuesday, May 22, at 7.15 p.m. Fellows and Associates may invite friends, and must obtain Tickets for the Dinner (price 8s. 6d. each, exclusive of wine and attendance), from the Assistant Secretary, not later than Monday, May 21.

Inspection and Certification of Strawberry Plants.—The Ministry of Agriculture and Fisheries is prepared to undertake the inspection of stocks of Strawberry plants, from which runners are to be taken for sale during the present season, with a view to their certification if found to be true to type and reasonably free from rogues. It is not possible to certify freedom from disease, but certificates will not be issued in respect of stocks which are found to be obviously unhealthy or lacking in vigour. In addition to the ordinary form of certificate, "super" certificates will be issued in cases where growers give undertakings in writing to confine within certain limits the number of runners and young plants retained on each parent plant. The fees payable for inspections will be at the rate of 10s. per acre or part of an acre in the case of ordinary certificates, and 15s. per acre or part of an acre where "super" certificates are required. An additional charge of 1s. will be payable for each original and 3d. for each copy certificate issued. An explanatory memorandum and forms of application for inspection may be obtained from the Secretary, Ministry of Agriculture and Fisheries, 10, Whitehall Place, London, S.W.1. Growers wishing to avail themselves of the facilities offered under this scheme should submit their applications before May 31, 1928; applications reaching the Ministry after that date will not be accepted. At the close of the inspection season a list will be issued by the Ministry giving the names of growers whose stocks have been certified.

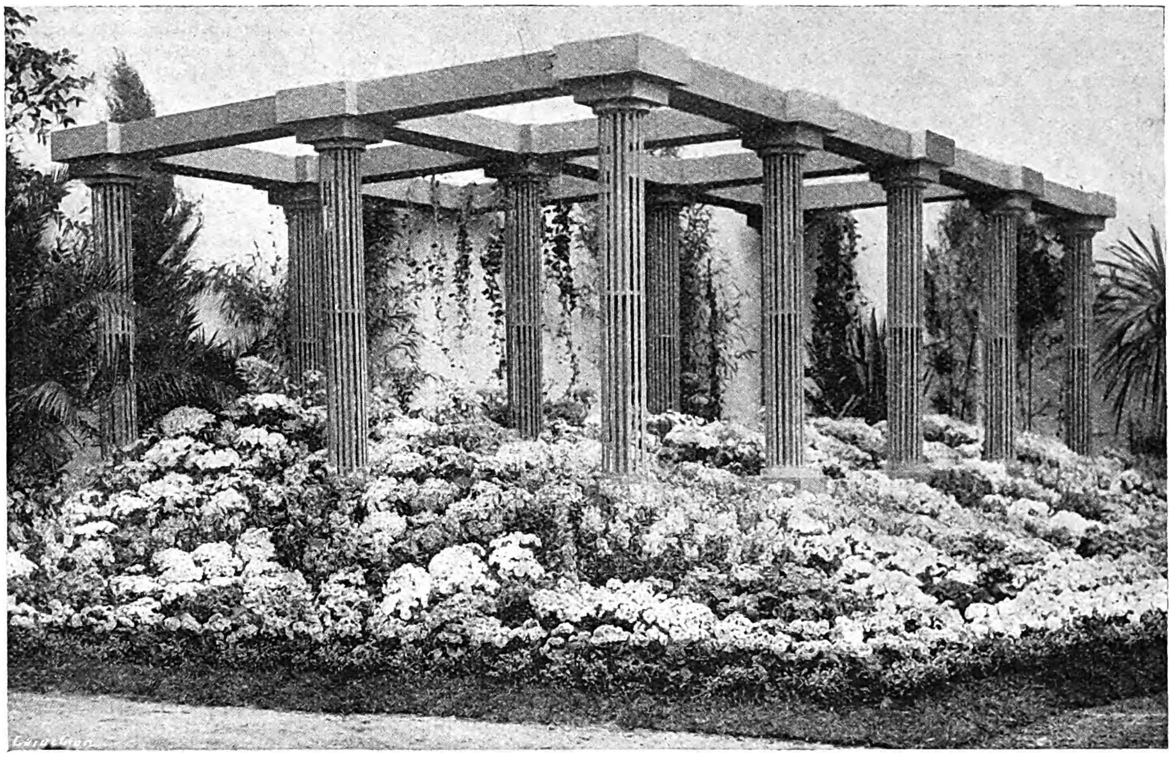

FIG. 147.—GHENT QUINQUENNIAL EXHIBITION: PART OF MESSRS. VILMORIN-ANDRIEUX ET CIE'S GROUP IN THE FRENCH SECTION.
(see page 322.)

Leonardslee Gardens, Horsham.—Lady Loder will open the above gardens to the public on Thursday May 24, Friday, May 25 and Saturday, May 26, from 12 noon to 7 p.m., on behalf of Sussex Hospitals and Nursing Associations. These are the only days on which the public will be admitted to the grounds. Admission 1s.

London Gardens Exhibition.—Owing to the need of more adequate accommodation, it has been decided to transfer this Exhibition from the Temple Gardens to Lord's Cricket Ground. There will be ample room under cover for corporate displays by societies, for exhibits by individual competitors, and for trade displays of flowers. The exhibition will be held on September 6, 7 and 8, and Her Royal Highness the Duchess of York has been invited to open the show. The schedule of classes may be obtained on application to the Honorary Organiser, London Gardens Guild, 9, Gower Street, W.C.1.

Primroses from the Queen—Her Majesty Queen Mary has sent a box of Primroses from Sandringham to The General Lying-in Hospital, York Road, Lambeth, S.E.1. Her Majesty is an annual subscriber to the Hospital.

Appointments for the Ensuing Week. — Sunday, May 6: Wakefield and North of England Tulip Society's Meeting. Monday, May 7: Romsey Gardeners' Association's meeting; Harrogate Horticultural Association's meeting. Tuesday, May 8: Royal Horticultural Society's Committees meet (two days); National Tulip Society's Show (two days). Wednesday, May 9: Sheffield Chrysanthemum Society's meeting. Friday, May 11: Manchester and North of England Orchid Society's meeting; Royal Horticultural Society of Ireland meeting. Saturday, May 12: British Mycological Society's Spring Foray for London Students at Effingham.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Gardeners' Benevolent Institution.*—"A Working Bee", asks, "How is it that so many nurserymen and seedsmen in the United Kingdom have been appealed to in vain to support this Institution (for the relief of aged and infirm gardeners and their widows); are they all so poor, or have they no sympathy with a class of men who have helped, both directly and indirectly, to raise them to positions of comfort, and, in many cases, of affluence?" Admitting this statement to be correct, let me ask, why the list of subscribers exhibits such a paucity of gardeners' names? Is it that they have no sympathy for their poor brethren? I shall not defend the nurserymen and seedsmen of the United Kingdom, or any one of them, but beg your attention to a few facts which your correspondent seems to be unaware of, namely, when the first meeting was called by advertisement in the autumn of 1833, to take place at the Turk's Head Hotel, in the Strand, for the purpose of considering the necessity of such an institution as the one we now have, the gardeners did not respond to that call. The nurserymen met, and on that occasion put down their money, and thus commenced to lay the foundation of the Gardeners' Benevolent Institution, which last year paid pensions to aged gardeners and their widows, to the handsome amount of £519. At the first meeting only one gardener attended, and he never supported the Institution. I do not "blush" for the want of sympathy on the part of nurserymen, but on the contrary, they have my grateful thanks for what they have done, assisted by benevolent gentlemen; although the Institution is not so great, or so prosperous as its best friends and supporters could wish, yet, it is to the early labours of nurserymen and seedsmen that the merit is due, and not to any other class. Who is there who will not blush at the gardeners' want of sympathy for their own poor, broken-down brethren? This is the gardeners' case (not the nurserymen and seedsmen); they should be put upon their trial, and I am much mistaken if abundant evidence cannot be brought forward to convict them of want of sympathy—if of nothing worse. Will your readers believe that there are only sixty noblemen's gardeners who are subscribers to the Institution? Surely there must be four times that number of noblemen in the country who keep gardens and employ gardeners, besides a large number of landed gentlemen. Are they ignorant of the existence of the Institution in question? Twenty-four pounds have been spent the last two years in advertisements, calling attention to it. At the coming election of pensioners, I trust that the subscribers will give their support and influence to those candidates who have at any time contributed to the support of others, by having been subscribers. *J. B. C., Clapham.* [The last paragraph appears to us to point directly to the reason why gardeners are not greater supporters of the charity. They see by experience *that pertinacious* begging letters enable persons who have contributed nothing to be elected pensioners, to the exclusion of others who have subscribed to the utmost of their means.] *Gard. Chron.*, April 30, 1853.

Publications Received. — *The Protection of Woodlands*, by G. W. St. Clair Thompson; price 10/6 net.—*A Garden Book for Malaya*, by Kathleen Gough, price 16/–; both published by H. F. and G. Witherby, 326, High Holborn, W.C.1.—*Popular Hardy Perennials*, by T. W. Sanders; W. H. and L. Collingridge, 148, Aldersgate Street, E.C.1. Price 7/6 net.—*Bush Fruit Production*, by R. A. van Meter; *Hardy Evergreens*, by Frank A. Schrepfer; *Spring-flowering Bulbs*, by Clark L. Thayer; all published by the Orange Judd Publishing Co., New York, or Kegan Paul, Trench, Trubner and Co., Ltd., London; price $1.25 each.

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN MOORE, Manchester.

Houlletias.—Species of this distinct genus thrive when grown at the warm end of the intermediate house, if shaded from bright sunshine. During the growing season they require a humid atmosphere and ample supplies of water at the roots; when growth is complete, just sufficient water is required to keep the bulbs in a normal state. New roots are produced as the young growths advance, and any necessary repotting may then be done, using well-drained pans and a compost of three parts Osmunda and A.1. fibres, one part Sphagnum-moss, and a liberal quantity of broken charcoal. Water sparingly until the roots are well established in the fresh compost. Newly imported plants should be placed in a dry position in a cool house, where a gradually increased amount of light may be given, removing them later to an intermediate temperature and syringing the bulbs occasionally. Pot them when they show signs of activity, and examine each bulb carefully for insect pests, which may be destroyed with a weak insecticide.

Acinetas and Stanhopeas.—These showy Orchids require cultural conditions similar to those advised for Houlletias, except that they should be planted in baskets; avoid using any hard drainage material, so as to allow the pendulous flower spikes, which are produced at the base of the pseudo-bulbs, to grow through the baskets without injury. The flowers should remain perfect for a longer period if the plants are removed to drier quarters.

Bifrenaria Harrisoniae.—This free-flowering, fragrant Orchid is known under several synonyms. The plants thrive when afforded similar cultural conditions as advised for Lycastes; well-drained pans are the best receptacles and they should be suspended from the roof-glass so that the undersides of the leaves may be syringed frequently during the growing season to keep insect pests in check. Red spider frequently attacks the leaves if they are grown in a dry atmosphere, and careful sponging with a weak insecticide is the best remedy. The compost should consist of fibrous loam, A.1. fibre and Sphagnum-moss, which should be used in a fairly rough condition, adding crushed crocks and charcoal to keep it open and to allow the fleshy roots to grow freely without injury.

THE KITCHEN GARDEN.

By ALLAN FALCONER, Gardener to the Cheadle Royal Mental Hospital, Cheadle, Cheshire.

Leeks.—Maincrop Leeks, which were sown in boxes or frames in cold districts, may benefit by being pricked-out into cold frames when quite small; they should be put three inches apart in good soil. In favoured districts this is not necessary and good produce may be obtained from sowing outside. The method of boring holes one foot apart, with two feet between the rows, on ground which has been well prepared by heavy manuring is quite suitable for Leeks for late winter and spring use. For earlier use it is advisable to make trenches one foot wide and one foot deep, placing a heavy layer of manure in the trench and three inches of fine soil for planting in, and using plants which were raised early and pricked-out into boxes. Keep them supplied with water and liquid manure during dry weather, and earth them up gradually until the required length of blanch is attained. Exhibition Leeks require special attention to produce the fine specimens to be seen at the leading shows, and are best secured by early sowing and potting into six-inch pots, ready for planting out early in May. Previous to planting, trenches should be made two feet deep and eighteen inches wide, placing one foot depth of fresh, strawy horse-manure in the bottom; make it firm, and cover it with three inches of decayed manure and six inches of fine potting soil mixed with bone-meal. The fresh manure will warm the soil and make an ideal medium for the plants to start in. Every encouragement should be given them to grow as quickly as possible, and the blanching should be completed by the middle of July. Almost immediately after planting, paper collars six inches high, should be placed round the Leeks. It is advisable to put boards along each side of the trench, as a protection against cold winds and to receive the soil for blanching, which may be done gradually as growth proceeds by lifting the collars a little and placing some sandy soil between the boards; keep them well supplied with water and liquid manure. Good specimen Leeks may be produced by this treatment for the August shows.

PLANTS UNDER GLASS.

By J. COUTTS, Assistant Curator, Royal Gardens, Kew.

Cinerarias.—If it is desired to have an early display of these in flower, seeds of approved varieties should now be sown in a cool greenhouse. Although the large-flowered florists' varieties are still popular with many growers, the smaller-flowered, intermediate forms are more generally grown, for they are more decorative, and may be had in several shades of blue and rose, all of which are now popular for market work. Cinerarias require perfectly cool and moist conditions during all stages of their cultivation, and are best grown in low pits or cold frames during the summer months; they are very subject to attacks of green fly, which may be guarded against by frequent light fumigations. The compost should consist of a good medium loam, with enough sand to keep it porous; no leaf-soil need be used.

Gomphrena globosa.—The Globe Amaranth, of which there are several varieties, provides a display during the autumn and early winter. Seeds should be sown now in a temperature of 55° to 60°, and the plants require the same kind of treatment as Celosias. Of the many varieties, nana is, perhaps, the most attractive, with fine, dark red flowers.

Chrysanthemums.—These should not be allowed to suffer from lack of repotting, often no easy matter when time and space is limited. The lights should be left off the frames on every possible occasion; in fact, the plants may now be stood out-of-doors in a sheltered situation at the foot of a wall. Soil should be prepared in readiness for the final potting, consisting of a good medium to heavy loam, and enough coarse sand or old mortar-rubble to ensure free drainage; a sprinkling of soot and wood-ashes, and a five-inch potful of bone-meal to every bushel of compost may be added. With a fertile loam it should not be necessary to add at this stage any soluble, quick-acting fertilisers; it is time enough to use them when the pots are well filled with roots.

Clerodendron ugandense.—This beautiful blue-flowered subject may be grown successfully in large pots, but is seen at its best when planted out and trained up a pillar. It is propagated easily at any time by means of cuttings. C. myricoides, the only other blue-flowered species, although distinct, is by no means such a good garden plant as C. ugandense.

FRUITS UNDER GLASS.

By T. PATEMAN, Gardener to SIR CHARLES NALL-CAIN, Brocket Hall, Hertfordshire.

Late Strawberries in Pots.—The latest batch of Strawberries is generally grown in a cool house or frame, to produce fruits just before they are obtainable from an early border in the open. To be successful with this crop extreme care is necessary. With the drying winds and increasing sun power, watering may be necessary several times daily, for if the roots are allowed to remain dry for any length of time the fruits may become deformed, and it will favour the appearance of red spider. Weak liquid manure should be applied frequently while the fruits are swelling, but it should be discontinued when the berries are on the point of ripening. So soon as these have been gathered, the strongest plants may be gradually hardened-off and planted outside in well-prepared soil, to produce fruits next season.

Thinning of Fruits.—This operation is undoubtedly an important one. If the cultivator is desirous of producing fruits of good quality, he should thin his crop judiciously, for over-cropping of such subjects as Grapes, Peaches, Figs, Pears, in fact most fruit trees, not only results in the production of small, flavourless fruits, but also tends to weaken the vines and trees. No hard and fast rule may be given and each grower has to exercise his own judgment, for the number of fruits to be retained should naturally depend on the strength and vigour of the individual vines or trees. Too heavy thinning should be guarded against for light cropping is not to be recommended, especially if the trees are inclined to be vigorous; if such trees fail to produce sufficient fruits the causes may often be traced to the roots being in uncongenial soil. The thinning of the crops should be carried out so soon as it is safe to do so, for postponement of the work until after the stoning period merely wastes the tree's energies

Early Figs.—The January-started trees should now be ripening their fruits, and the borders in which they are growing may be kept somewhat drier during the ripening period, but the roots should never be allowed to suffer through lack of moisture. Up to this stage, frequent syringings have been necessary, but now that the fruits are ripening these should be lessened, and the atmosphere may be kept slightly drier, especially when closing the house in the early afternoon. A slight opening of the top ventilators at night is to be recommended, and the temperature should range from 60° to 65°, but these readings may be exceeded during bright, sunny days. Pinch back all gross shoots and remove any weak or crowded growths to give the small fruits every possible chance to develop.

HARDY FRUIT GARDEN.

By T. E. TOMALIN, Gardener to the EARL OF BESSBOROUGH, Stansted Park, Emsworth, Sussex.

Autumn-fruiting Raspberries.—If the canes of these were cut down to the ground in February, numbers of young growths should now be appearing. These should be thinned without delay to a distance of about one foot apart. In congenial soils some varieties of autumn-fruiting Raspberries produce such thickets of young growths at this season that they are managed more easily if replanted annually in February. Having thinned the young growths to the required distances apart, the hoe should be used frequently amongst them to suppress all secondary shoots and to encourage the fruiting canes to develop sturdily. These should never be allowed to become overcrowded, and should be secured to supports when eighteen inches high.

Watering and Mulching.—Borders in which fruit trees are growing often become dry very quickly during spells of dry easterly winds; moreover, the porous brick walls often absorb much moisture from the soil. A thorough soaking with water should be given in such cases, before the soil becomes too dry. Where good crops of fruits have set, well-diluted liquid manure should prove helpful at this stage, or one of the several reliable proprietary fruit tree manures may be sprinkled on the borders, at the rate of one ounce to the square yard, and watered in. Mulching is a valuable aid in conserving moisture in the soil, and is especially necessary for well drained borders against walls. Early in May is a suitable time to apply mulches, for by this time the borders should be warm. Heavy dressings of manure are not advisable, but the grower should be guided by the particular requirements of the trees. Established Pear trees, carrying good crops, benefit by an annual mulching of good stable manure, but Apricots, Plums and Peaches should only be so treated when good crops of fruits have set; if the crops are small, a covering of short grass from the lawn mower should be sufficient. Mature Morello Cherry trees usually bear heavy crops annually, and are benefited by a mulching of farmyard manure, but dessert Cherries require rather less generous treatment; for these, stable manure and lawn grass in alternate years, should be suitable. Mulching not only conserves moisture and provides food for the trees, but it enables the grower to attend to the disbudding, stopping of growths and summer pruning, during wet weather, without producing the bad effects which follow treading on the soil whilst it is wet.

THE FLOWER GARDEN.

By J. G. Weston, Gardener to the Duke of Devonshire, Chatsworth, Bakewell, Derbyshire.

Nymphaeas.—The cultivation of these delightful flowers has made immense strides of late years, and few gardens may now be found without Water-Lilies, even if they have to be grown in tubs or artificial ponds. Preparations should now be made to divide and transplant clumps of Nymphaeas which have become crowded, as the masses of leaves may hinder the development of the flowers. There is now a splendid selection of varieties and hybrids, suitable for all purposes. The stronger-growing sorts, such as the majority of the Marliacea hybrids, should be planted in approximately three to four feet depth of water, while for some of the less robust varieties a depth of two feet is ample. If a large area of water is to be planted, discretion should be used as to the distance the Lilies should be planted from the sides; if placed too far out the full beauty of their blooms will not be appreciated. For those contemplating starting a collection, such reliable Nymphaeas as Colossea, Somptuosa, and Brackleyi rosea; Marliacea chromatella, carnea, rosea, and albida; Gladstoniana, tuberosa, William Falconer, W. Doogue, Aurora, Mrs. Richmond, gigantea, Robinsoniana and Gloriosa, with the fragrant N. pygmaea and its variety helvola, and N. odorata alba for tubs, will prove suitable. Shallow baskets holding about a bushel of soil may be used, and turfy loam and leaf-soil should form an excellent compost in which to start them; no manure is necessary. The roots of the Water Lilies will penetrate the baskets quickly, and by the time the latter have decayed, the Lilies should be quite established.

FOR NORTHERN GARDENERS.

By A. T. Harrison, Gardener at Jordanhill Training Centre, Glasgow.

Vegetables.—Full sowings of many kinds of vegetables may now be made, in succession to those already sown, and these should include Peas in variety, Spinach, Turnips, early Beet, Carrots, Radish, Lettuce, etc. The earlier-sown Peas should be staked at an early stage, and before doing so they should be supported at the ground level by drawing the soil up to them on either side with a draw hoe. Any kind of Pea sticks may serve, but all are not equally as good, and Spruce branches have an annoying habit of turning round soon after they are placed in position. Hazel-boughs are largely used in some parts of the country, but the best and most lasting Pea sticks are those of the Douglas Fir. In old plantations of this subject the under-branches are usually found in large quantities, quite devoid of foliage and to all appearance dead, but they contain a preservative in the form of resin, which enables them to remain useful for several seasons. Where Pea trainers are used, it is advisable before placing them in position to place a few twigs along each side of the rows to keep the plants erect from the start.

Carrots.—Perhaps no crop in the kitchen garden is more uncertain than that of Carrots, and unless careful preparations are made on certain kinds of soil, it often fails. On sandy and light soils their success is more assured, and where regular and heavy dressings of seaweed may be obtained for the sandy soils, and dug in during the winter months, it forms a complete manure for Carrots. Precautions require to be taken even under the most suitable conditions to prevent attacks from the Carrot fly, by spraying at frequent intervals with a strong-smelling insecticide in order to drive this unwelcome intruder away, and prevent it from laying its eggs. These spraying operations are particularly necessary before and after thinning the crop, as the most careful worker cannot avoid bruising and breaking the young plants, and the odour is carried in the air, attracting the female fly just when she is on the look-out for a place in which to deposit her eggs.

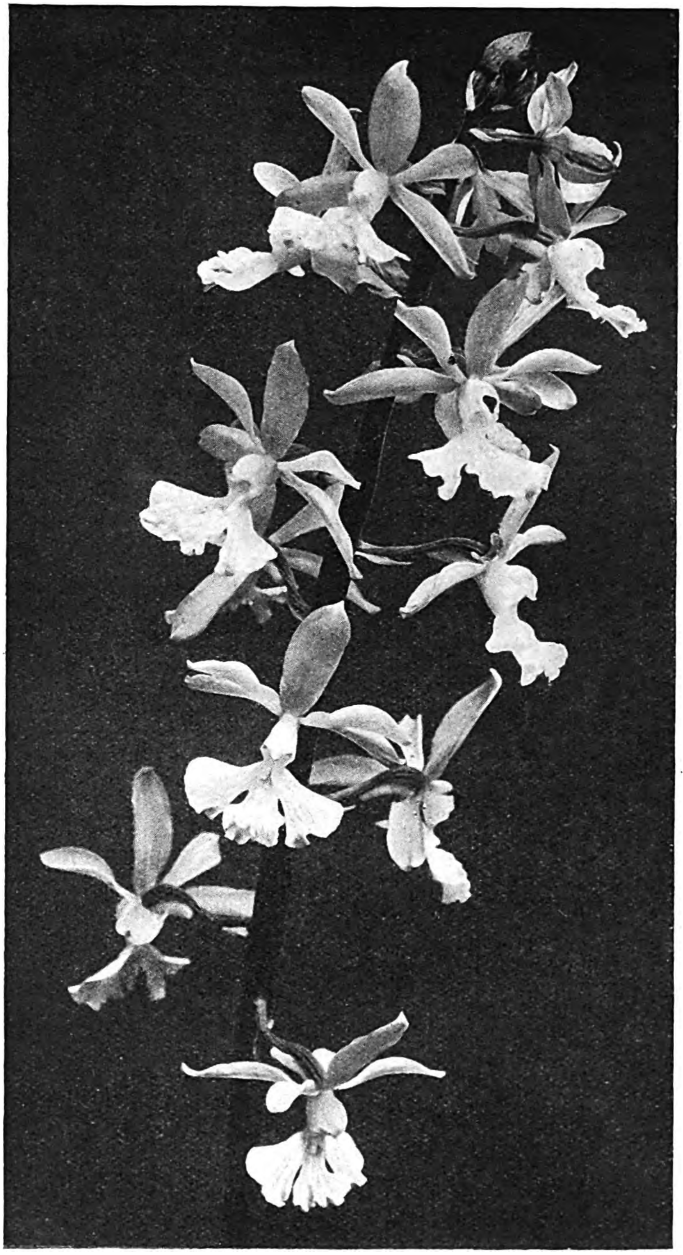

FIG. 148.—CALANTHE STRIATA VAR. BUTTERCUP.
Flowers bright yellow; exhibited by Mrs. Carl Holmes, The Node, Welwyn, at the R.H.S. Meeting on April 24.
(see p. 303).

Early - flowering Chrysanthemums. — The cuttings that were inserted in early March, and have been hardened-off, should now be ready for planting where they are to flower. For effect, they should be planted in beds or groups of one variety, choosing only the kinds which have proved satisfactory in former years for the most prominent positions and growing the newer or less reliable sorts in the reserve garden. These, however, should have equal opportunities as regards soil, situation, etc., so that they may have a chance to develop naturally and show their characteristic habits. Chrysanthemums may be grown in comparatively poor soils, but they are gross feeders, and where the soil is known to be deficient in humus, they should be regularly supplied with liquid manure, and an occasional top-dressing of artificial manure when the flower beds are formed.

Hoeing.—Every opportunity should be taken, when the surface soil is dry, to run the Dutch hoe between the rows of all seedlings, breaking up the crust which has formed since sowing time, and incidentally destroying innumerable seedling weeds at a stage when they are most easily dealt with. Seedlings should be thinned at an early stage, and any weeds in the rows removed by hand, after which the hoe should be used between the rows. Where perennial weeds are troublesome they should be forked out and disturbed frequently throughout the growing season.

ALPINE GARDEN.

ASPERULA SUBEROSA.

One of the most delightful members of the Asperulas, or Woodruffs, is that named A. suberosa, which is a general favourite wherever grown; and no good rock garden may be said to be complete without the possession of this charming little plant. Its minute stature, neat habit, and alluring flowers, all combine to make it an ideal plant for the purpose. It forms a green cushion of narrow leaves, velvety soft to the touch, while, when it flowers, it produces little miniature spikes of trumpet-like flowers of a bright shade of pink. Words fail to convey any impression of its loveliness, and the camera cannot do it justice. The plant itself is its own best passport to our affections, and he would indeed be a churl who did not feel fascinated by the sweet little Woodruff from Mount Athos.

Asperula suberosa grows well in a poor compost of loam, leaf-soil, grit and sand, and in sun. It should be planted firmly, and a top-dressing of fine soil worked into the cushion of foliage with the fingers in spring and autumn will be well rewarded by increased vigour. It is said to be frequently sold for A. arcadiensis, but it is doubtful if the true plant bearing the latter name is in commerce.

ARNEBIA ECHIOIDES.

Those who are familiar with this alpine plant may be unwilling to adopt the generic name of Macrotomia, which is understood to be the correct title. In conversation the other day with a highly experienced alpinist who has for some time had exceptional opportunities of seeing many rock gardens, besides being in touch with a host of growers, he mentioned to me that A. echioides seemed to be becoming very scarce. I felt disposed to agree with him, although we both found it difficult to understand why this should be.

It is easy to grow in a light soil and sunny position, but in some gardens it does not increase in size or afford material for cuttings. In most northern gardens, at least, it appears to seed but seldom, but I observe that seeds are offered in at least one of the current year's seed lists. In upwards of thirty years' experience of the plant, I have only seeded it once, and that was in a very warm summer. It appears almost superfluous to say anything in praise of the Prophet Flower, so called on account of the legend that the black spots on each flower, when it first opens, are the marks of the fingers of Mahomet.

Arnebia echioides is one of the best of rock plants, with its pretty lemon-yellow flowers, which become self-coloured as the spots fade away. I have never raised it from seeds myself, but I have an impression, perhaps erroneous, that the seeds are slow of germination.

RUBUS ARCTICUS.

The Arctic Bramble, Rubus arcticus, is a most charming subject for the rock garden, being pretty in bloom, pleasing and interesting when in fruit, and so easy to grow that every one may succeed with it.

It is only about six inches high at the most and frequently less, and bears extremely attractive, small flowers of a warm pink shade, and small, Raspberry-like fruits of a rather deeper colour. The fruits are delicately perfumed, and if a few are placed in a saucer and taken into the house they will fill a room with a delightful fragrance. It is to be noted, however, that the non-fruiting variety is often sold as R. arcticus, and it is necessary to stipulate, when buying, the fruiting variety, which is frequently called R. a. foecundus.

As a rule, text books are silent respecting the exposure for R. arcticus, whether it requires sun or shade. To the writer it appears that this Arctic Bramble should do well in either sun or shade. He has cultivated it in a rock garden, both in sun and shade, and in each case the proportion of flowers and fruits seemed much the same. Ordinary rock garden soil suits it well, and propagation is effected by removing the rooted runners or by seeds. Plants may be purchased in pots and planted at any time.

ARABIS TAPLOW ROSE.

For many years a number of those interested in early spring flowers have ardently desired a plant of similar habit, and coming into bloom at the same time as the white Arabises albida and alpina, but with the colour of the Aubrietias, to associate with the white Arabis.

When Arabis aubrietioides came on to the market, it was hoped that it would meet the requirements, but, besides being rather too pale in colour, it has not proved so hardy as one would desire, while it is a little too lax in habit to suit some rock gardens. More recently, some better coloured varieties, apparently of A. alpina, have appeared, and of these, that named Taplow Rose appears to be one of the best. One or two of these new varieties have not been free-flowering enough, but the plant of Taplow Rose, which I have grown, is both well-coloured and free. It opens blush, but soon passes into a good rose, and is an excellent companion to, and contrasts well with the white forms. Good masses of this Arabis, trailing over the rocks, should be very fine in early spring before the Aubrietias are at their best. *S. Arnott.*

TROPAEOLUM POLYPHYLLUM.

For trailing over sun-kissed rocks in the alpine garden, this beautiful plant from Chile is difficult to supersede, but it is seldom encountered in gardens, even where large and choice collections of rock plants are fostered, the scarcity being due, no doubt, to its uncertainness of surviving the unhappy winter conditions that we experience in this country.

Where it will survive it may flourish and form a really attractive feature from the time when its first leaves, which are finely divided and of a glaucous colour, are produced, until the last of the yellow blooms have faded, after which it rapidly dies down, often, unfortunately, never to appear again.

Such has been my experience, for I have tried it in several aspects and provided it with shelter in the form of overhanging shrubs. Through these it willingly trailed, but they failed to repay the favours bestowed by the Tropaeolum in clothing them with flowers and foliage of rare beauty, and so allowed it to perish during the drab winter months.

Good drainage was always provided and soils of varying compositions, with and without lime; yet although it survived on two separate occasions it has finally petered out.

My most successful attempt with it was by planting it in conjunction with Muehlenbeckia complexa, through which for two seasons it sent long, trailing, leafy growths, adding considerably to the beauty of the Muehlenbeckia which had, incidentally, to be kept rigidly within bounds.

On this occasion it was planted in loamy soil to which a little peat and a considerable quantity of granite chips was added, but, alas, it never became a permanent resident in my garden, and I almost despair of it ever doing so.

ARENARIA PURPURASCENS.

Belonging to a family that contains several members of rare decorative value, this lovely dwarf species is quite distinct and worthy of a place in every rock garden, for it is indeed an extremely beautiful subject.

When once established, by no means a difficult matter if suitable growing conditions are provided, it may form large masses of growths, clothed with small, oval, deep green and glossy leaves. The carpets of foliage are, during July and August, well furnished with innumerable small flowers of a delicate rose-lilac shade, slightly deeper towards the centres, which impart to the plants a very attractive appearance.

Arenaria purpurascens is by no means difficult to grow, for it is a lover of warm, sunny situations, where it may enjoy a cool, deep root-run; crevices between rocks or deep, well-drained beds that contain a large percentage of broken rocks and chips, and soil of a fairly light, loamy nature, should fulfil all its requirements.

It is increased easily by division; cuttings inserted in sandy soil under a bell-glass during the summer months, and raising from seeds, are also methods which may be employed successfully. *M. W.*

ANEMONE VERNALIS.

Some clumps of this delightful spring flower have done very well in a dry moraine for a good many years, blooming profusely every season, and enduring all winter hardships with impunity. In a plant that is a high alpine and endowed with a peerless loveliness, this amiability of temperament is a matter upon which gardeners may congratulate themselves. The foliage of A. vernalis, which is not entirely herbaceous, consists of a flattish tuft of deeply-cut, Carrot-like leaves, which are neither green nor bronze, but a little of each. From this unpromising base there rise in March or April several upright stems of two or three inches, clothed with a fur of tawny gold. The cone-shaped flower-bud with which each stem is terminated, is similarly covered, and when the sepals expand the interior of the silken goblet discloses not only a lining of exquisite whiteness, but bold clusters of vivid, orange-yellow anthers. These beautiful blooms, moreover, are yielded without stint, they withstand rough weather remarkably well and continue for several weeks.

A. vernalis is not a new plant, having been introduced in 1752, but it is not so common in gardens as its willing nature entitles it to be. Although I grow it in scree, it will prosper in any average rock garden soil with full exposure to sun. It is a good perennial, is transplanted easily, and may be raised from seeds without difficulty. In a wild state, A. vernalis occurs at intervals upon most of the mountain ranges of Europe, from Scandinavia to Russia and southward to Germany and France, the Pyrenees and the Sierra Nevada. It grows always in high altitudes, usually in turf but not infrequently in scree. *A. T. J.*

PRIMULAS AS LIME LOVERS.

I was extremely interested in the article entitled "Primulas and Lime," written by Mr. A. Grove in the issue of *The Gardeners' Chronicle* for April 7, (p. 248).

Whilst I can add very little to the store of knowledge at present available on the subject, yet it is a question which fascinates me, as does all that has to do with the culture and the habits of the genus Primula, both Asiatic and European. Unfortunately, I have to grow plants as a profession; I use the word "unfortunately" advisedly, for I hate selling plants, and should wish to devote the greater part of my time which has to be given up to routine work, to increasing my sketchy knowledge of the Primulas and other rare and interesting plants.

Here, we are in the position quoted by Mr. Grove in the last paragraph of his article, in that we are on a distinctly non-calcareous formation; our soil is a rather heavy, fibrous loam, with peat in the vicinity, ideal, of course, for many plants, but useless for experimenting for calcifugal tendencies. We have been very averse to introducing lime into the nursery, for it is so insiduous. For years we were restricted to growing those plants which would endure lime in quantity, both in soil and water, thus it has been an unmixed pleasure to revel in an orgy of Rhododendrons, Ericas, Primulas, etc.

I am, however, going to make an endeavour to devote a corner of the nursery to experimental work amongst the Asiatics. With the Europeans, of course, the control is an easier matter, for one can grow them in stone sinks and separate screes, and isolate them completely.

So far, I have grown my representative collection of European species and hybrids of Primulas in a specially constructed granite scree or moraine; they have been a great success, with the sole exception, so far, of P. marginata, which prefers being wedged into crevices in limestone. I find that this preference for lime extends to a number of the marginata hybrids, those two treasures, now unfortunately so rare, P. Linda Pope and P. Marven, both do better with me in lime than in granite.

I am about to construct a precisely similar scree to my granite one, only with limestone, and shall plant it with a duplicate collection, and keep careful notes of the results.

I find that P. Allionii is not quite so calciphilous as suggested by Mr. Grove. I have succeeded with it very well in granite, always provided that wet be kept from the leaves, I admit, however, that it is happier in lime.

With regard to P. Littoniana, a friend of mine who was courageous enough to garden for a number of years in the centre of a northern manufacturing town (and with considerable success), tried the plant in a number of situations with a complete lack of results, at least favourable ones. At last, in despair, he planted it in a limestone scree! Here it throve and flowered, although not attaining its full stature on this starvation diet; this would point to the fact that it is not intolerant of lime.

I fear that these few remarks do but expose my very great ignorance, but I hope, with Mr. Grove, that we shall hear some of the experiences of those who have the opportunity of giving us information on the subject. *Will Ingwersen.*

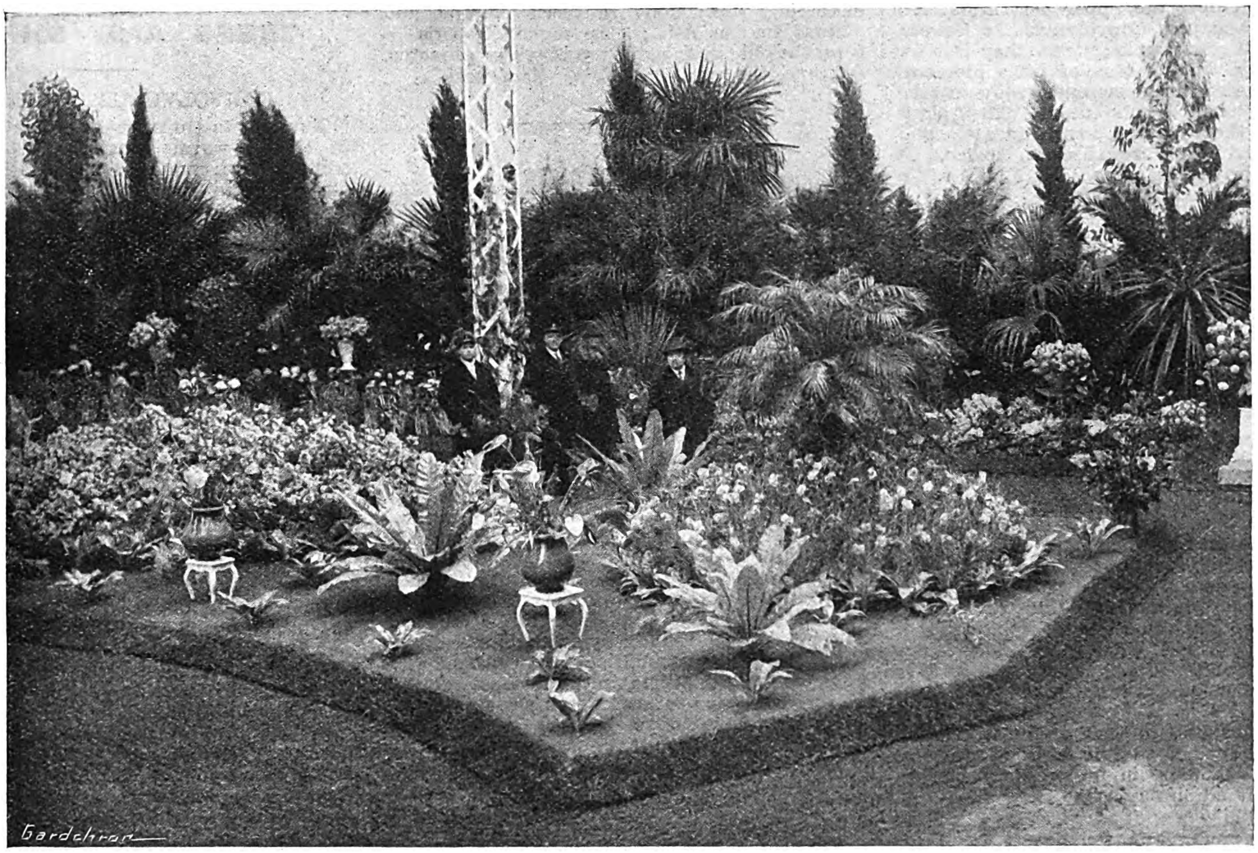

FIG. 149.—GHENT QUINQUENNIAL EXHIBITION: VIEW IN THE FRENCH SECTION, SHOWING ASPLENIUMS, PALMS AND AGAVES FROM MONTE CARLO.

(see page 322).

BULB GARDEN.

PUSCHKINIA SCILLOIDES.

AMONG the various spring bulbous plants that gladden the heart at this season of the year, the Striped Squill, to give it its popular name, is one of the most beautiful, and is a most useful subject where an early effect is desired.

The requirements of this subject are similar to those of Scillas and Chionodoxas; in fact, where these two will flourish there also should the Puschkinia make itself at home, and every year produce its spikes, four or five inches in height, of delicate, pale blue flowers, striped with a deeper shade.

The soil in which it is planted should be well worked previously, as it need not be disturbed for a number of years; and it does most satisfactorily in a warm, sunny position, the bulbs requiring to be planted at a depth of about four inches.

Puschkinia scilloides is by no means uncommon and may be secured from nurserymen who deal in such subjects; it is a plant that responds well to pot culture, either in the alpine house or the conservatory. *M. W.*

ERYTHRONIUMS.

THE Dog's Tooth Violets rank high among the most delightful of spring-flowering bulbous plants. In elegance and colour they have few rivals; most of them are easily grown and permanent under average conditions, and many take so kindly to woodland, turf, or the rock garden that they become naturalised. In spite of their undoubted merit and charm they are comparatively uncommon in gardens generally, and this is the more surprising when one realises that the European species, E. Dens-canis, was introduced in the early part of the sixteenth century, before the arrival of the Snowdrop. Moreover, the bulbs of all the most notable kinds are procurable through the ordinary channels of trade, and they are not expensive.

The Erythroniums are liliaceous plants and grow well in fairly cool loam or sandy peat, provided the drainage is good. They dislike excessive wet and do not prosper in very dry, arid soils. Partial shade is desirable but not essential. They are ideal woodland plants and enjoy the filtered sunlight beneath deciduous trees, and are quite able to hold their own among the light herbage of such places. E. Dens-canis is, perhaps, the species most readily adaptable for naturalising in turf, and it often thrives in ground that gets very dry in summer. With this species, as well as all others, early planting is essential. The bulbs should be ordered so soon as the first of the autumn lists come in, and planting carried out at the beginning of September. They should be put in rather deeply, about six to nine inches, but the nature of the soil should decide this matter to some extent, for whilst the average depth may be as stated, it is safe to err on the deep side in light land, and to plant them comparatively shallow where the soil is cold and heavy. Once planted, the bulbs should not be disturbed, but division of old clumps which have ceased to flower satisfactorily may be undertaken in summer so soon as the foliage has died down.

The broad, emerald leaves, with their brown marbling, of E. Dens-canis, are often among the first signs of life to appear in early spring. These are soon followed by large blooms whose segments, like those of the rest of the Erythroniums, are reflexed. There are at least half-a-dozen varieties of this species, their colours being various soft shades of rose, lilac and purple, and there is a pure white form.

The rest of the Erythroniums included in the trade lists are all New World species, and among them E. grandiflorum, with yellow blossoms, is one of the most delightful. It grows to about eight inches in height and bears several flowers on each stem. The beautiful E. giganteum (syn. Watsoni) with large flowers resembling those of a Martagon Lily, in ivory-white, with a deep orange ring at the base, is a form of the last-mentioned. It is difficult to make comparisons where all are so lovely, but among the choicer kinds I think preference should be accorded to E. revolutum Johnsoni and E. r. White Beauty. The pale green, tongue-shaped leaves of these are very glossy and richly marbled with brown, and the flowers, nearly two inches across, are held erect on six-inch stems; in the former they are rosy-carmine in colour, rich and vivid, with a yellow base, whilst in the latter the blooms are a warm white, boldly banded with maroon. These beautiful Erythroniums appear to be closely allied to, if not forms of, E. grandiflorum, and they frequently bear several flowers on a scape.

E. Hendersoni, in colour pale rose with a purple eye, is another extremely attractive kind, and no collection should be without E. americanum, which has deep yellow flowers shaded with bronzy-purple on the reverse, and E. californicum, an ivory-white-flowered subject. *A. T. J.*

FLOWER GARDEN.

IPOMOEA PURGA.

DESPITE its potent medicinal qualities, the Jalap Plant is a most charming autumnal flowering climber. It is sometimes known as Exogonium Purga, but Nicholson describes it under Ipomoea Purga, as a "stove evergreen twiner," which in those days, forty years ago, it undoubtedly was. Since then it has been tested in the open air; Canon Ellacombe was one of the first to test it, and grew it to perfection at Bitton in Gloucestershire. For many years we grew it against a wall, its only protection being a few shovelfuls of ashes over the resting tubers during winter. The tubers are spherical in shape, and should be planted in well-drained soil at the base of a south wall. Growth commences rather late, and wires or trellis should be provided so that its twining stems may climb and spread freely, without a check, to a height of nine or ten feet. It is when it has reached this limit that the shoots may be allowed to hang out freely from the wall. In late August or early September the upper part is covered with trumpet-shaped, Convolvulus-like flowers, of a beautiful rose-purple; true, they last for one day only, but that is of little moment, for each morning finds new ones ready to take their place until frosts occur. The plant belongs to the Order Convolvulaceae, and was introduced in 1838 from Xalapa, Mexico. It was figured in the *Bot. Reg.*, XXXIII, t. 49. *J. Comber, Nymans Gardens.*

TRACHYSTEMON ORIENTALE.

WHILE walking round a friend's garden recently, I came upon a plant which to me was quite new, and upon enquiry was informed that it was Trachystemon orientale. It was growing on the margin of a pond in rich, well-worked soil, and at this early season of the year was well furnished with sprays of blue-and-white flowers, those still in bud being of a rich rosy-purple colour; I was told that the flowers would continue to be produced for at least another month and probably longer.

They are borne on hairy stems up to about one foot in height, over large, handsome leaves that are at present tinged with shades of purplish-bronze, but which, when mature, should be dark rich green in colour.

Trachystemon orientale is an uncommon and quaintly handsome plant, apparently a native of Asia Minor, and I am most certainly going to secure a plant of it for my own garden. It may be increased easily by division, and although I have no pond margin in which to place it, I feel certain that a lightly shaded position and good deep soil enriched with an abundance of humus, in an ordinary border, should suit it admirably. *W.*

HARDY FLOWER BORDER.

SWEET ROCKETS.

THE resuscitation of old-world flowers is, I think, an objective carrying the approval of all flower lovers; many of these fine and, for the most part fragrant flowers, are indissolubly linked with British home life, and they rightly claim the affection of all. Many are characterised by a perfection of form, by brilliance of colouring and by a delicious fragrance unexcelled, if equalled, by more recent creations; the various forms of Hesperis matronalis, variously known as Damask Violet, Dame's Rocket, Dame's Violet and Sweet Rocket, are just simple and, withal, very beautiful plants, noteworthy for their graceful carriage and delicate rather than striking coloration. They possess a delectable perfume but, above all, entwined around them is that atmosphere of an old-world English garden.

I know of an ancient churchyard in the West Country, where masses of Sweet Rockets bloom in profusion, and in the gloaming of a summer evening there is an atmosphere of quiet beauty and an all-pervading perfume about the place. It is when massed, near the house for preference, that this plant is most effective; and when grouped in borders, in the forefront of shrubberies, or in the wild garden, it is delightful.

The Sweet Rocket is not fastidious, but thrives in a moist, sandy loam.

So soon as the plants have ceased flowering, the flower stems should be cut about half-way down, with the result that several shoots appear on the remaining portion of stem; draw a small quantity of soil around the stools and, should dry weather supervene, water copiously. As the shoots become sufficiently strong, they may be detached and planted in a prepared bed of loam, leaf-soil and sand; a succession of shoots appears on the old stems, and these may be inserted as they become ready. The above is an old method of propagation, and one of proved efficiency.

Fine varieties of this subject are H. matronalis alba plena, the old, double, white Rocket; the double lilac, the double white, dwarf Scotch, and the double dark purple. The single-flowered varieties are not to be despised for massed planting in suitable situations.

H. matronalis is found over a wide area, extending throughout southern Europe and across Russian Asia; the name Hesperis is from the old Greek name used by Theophrastus, *hesperos*, the evening. *Ralph E. Arnold.*

INDOOR PLANTS.

PSYCHOTRIA JASMINIFLORA.

THIS subject, perhaps better known as Gloneria jasminiflora, and sometimes referred to as Myrstiphyllum jasminiflora, is a handsome stove plant of great beauty and utility. It belongs to the Order Rubiaceae, and bears a strong resemblance to the Bouvardias and Ixoras. Under cultivation it forms a stout shrub about eighteen inches in height, clothed with shining evergreen leaves, and during the summer it produces large corymbose panicles of handsome, white, tubular flowers, resembling those of the white Jasmine. Its cultural requirements are similar to those of the Gardenia, Ixora and other semi-hardwooded stove subjects. Cuttings root quickly in the spring, if young shoots are inserted in a mixture of equal parts of cocoa-nut fibre and silver sand, and are prevented from flagging by being covered with a bell-jar. They should be potted into six-inch pots, in gradual stages, and the shoots should be pinched twice to ensure a bushy habit.

During their active growing season, from March to September, they are happiest in the shady part of the house, but a lighter position is better for them from October to March, when they should be rested by keeping the soil on the dry side.

Old plants may have their branches pruned back to within three inches of their bases in March, and after being allowed to break, should be shaken out and repotted. Plants of this description should form large specimens for summer blooming.

P. jasminiflora is the only species worth cultivating for decorative purposes. The other species, about six in number, bear insignificant flowers, and they are all natives of either tropical America or Africa.

P. emetica is grown for its roots, which produce Black Ipecacuanha, one of the many substitutes for the true Ipecacuanha drug. The derivation of the generic name is somewhat obscure, but it is supposed by some to be taken from the Greek word *Psyche*, meaning "life" or "soul," in allusion to the active properties of the roots of several of the species. P. jasminiflora is figured in the *Bot. Mag.*, t. 6,544.

Before the war several of the leading growers of greenhouse plants used to stock this species, but I expect that it is very difficult to obtain nowadays. *G. F. Gardiner.*

JACOBINIA PAUCIFLORA.

ALTHOUGH introduced from Brazil so long ago as 1862, this highly ornamental Acanthaceous plant, also known as Libonia floribunda, is not very widely grown, yet it is a remarkably free-flowering subject, and noted for its brightness throughout the winter season. Its drooping, tubular flowers, which are scarlet and yellow are not so large as those of some of our winter-flowering plants, but they are produced in great abundance and are very pleasing and attractive. They are very valuable for conservatory decoration, and neatly-grown specimens are also useful for the decoration of indoor apartments.

It is easy to propagate and grow, and cuttings should be struck in heat early in the year, and grown on in an intermediate house. They should be potted on as required, and stopped once or twice during the season to induce the formation of bushy, shapely heads. It is important that the plants should be given abundant light during the autumn to ensure maturation of the growths from which the winter flowers are produced. A moderately light, sandy compost is desirable, and firm potting should be practised. *A. N. R. S.*

TREES AND SHRUBS.

CONVOLVULUS CNEORUM.

FEW plants are more deserving of cultivation in choice, warm situations, where beautiful subjects are required, than is this shrubby Convolvulus. In all but the warmest districts of this country it requires the protection of a warm wall, but it may be used for a variety of purposes; it is an ideal plant for the rock garden, and also responds well to pot culture, when it may be grown either in a conservatory or in an alpine house, the conditions of the latter suiting it admirably.

It is evergreen, the whole plant presenting a silvery appearance, for both the young growths and the leaves are closely covered with silky hairs; the flowers are trumpet-like in shape and clear white, tinged with pink, the tube being shaded with yellow. They are exquisite, and produced freely in terminal clusters during early summer. It is indigenous to the south of Europe, and possibly its only fault is the lack of constitution to withstand the rigours of our winter climate, but this should not deter one from attempting its culture.

Convolvulus Cneorum is sometimes quoted as reaching a height of three or more feet, but I have not so far been fortunate enough to see such a specimen. With me, two feet is its limit against a wall, while on the rockery, in a sunny position against a large rock and in soil that is well-drained and of a light, loamy nature, it has reached eighteen inches. This latter specimen was, however, badly damaged by the severe wintry weather we experienced recently, and I had to cut the growths hard back but the plant is now growing again strongly, for the lower portions were unaffected.

With age, this shrub is liable to become rather straggly, but this may be remedied by the judicious shortening of the branches, and it may be increased easily by means of cuttings of the young growths; they should be inserted in beds of sand in a cold frame during the summer months. *Anerley.*

VACCINIUM MORTINIA.

HAVING proved this attractive evergreen reliable for a number of years, it was rather disappointing to find it injured by last winter's frosts. It has never hitherto suffered in the slightest degree, but over 20° of frost, with a biting wind, is evidently rather more than it can endure. However, as it has only suffered slightly—not so seriously as some of the Himalayan Gaultherias growing close by it—one may feel that it has rather added to its reputation than otherwise. As Mr. W. J. Bean points out, in *Trees and Shrubs Hardy in the British Isles,* it is no small achievement for a shrub which comes from within a few miles of the equator to exist at all in this country.

V. Mortinia was introduced by Hartweg in 1840, and its average height seems to be about three feet in our gardens. The elegant, spreading branches are closely set with ovate, slightly-toothed, dark green leaves, seldom more than half-an-inch long, and these as well as the young wood are densely covered with downy hairs. This shrub has not yet flowered here, but it does so in more southerly counties, and the rosy-pink racemes of cylindrical blossoms are by no means unattractive, although much hidden by the leafage. The soft, reddish-purple tint of the immature foliage and fresh shoots makes full compensation for this, and is alone enough to claim for this little evergreen a place among choice shrubs of its kind.

V. Mortinia is vigorous and healthy here in a moderately cool, but light, woodland loam. It is given partial shade of trees with the object of providing some winter protection, but this is, in all probability, rather inimical to its chances of flowering. *N. Wales.*

PRUNUS CERASIFERA BLIREIANA.

OF the several forms of this Plum, this is considered the best that has been put into commerce by the French and German nurserymen. It is reputed to be a hybrid between P. cerasifera Pissardi and the Japanese Apricot, P. Mume, which also flowers early in March or April.

The purple leaves show its relationship to P. cerasifera Pissardi, but the flowers are larger, bright rose and semi-double, the colour being evidently derived from the Japanese Apricot, as are the long, tapering apex to the leaves and their broadly ovate shape. There is also a broad grey patch of pubescence in the axils of the three lower veins, which may have been partly derived from both parents, and serves as a distinguishing feature of the hybrid. Usually these hairs are extended along the greater part of the midrib of several of the species of Prunus.

This hybrid has been flowering finely for some time past in the extensive collection at Westonbirt, Tetbury, Gloucester. *J. F.*

A REVISION OF VIOLAS.

(*Continued from p.* 282.)

VIOLA splendida, W. Becker, was placed first as a member of the heterophylla group, and therefore allied to V. calcarata, but it now appears to be a member of the Luteae section. It has no connection with either V. cornuta or V. gracilis. The stipules are clearly divided into from six to ten segments, and are thus not unlike those of V. Dubyana, except that the segments are lanceolate and obtuse instead of linear and acute. The flowers are very large, sometimes exceeding even an inch-and-a-half in breadth. The spur is long, equal to or longer than the bottom petal. Unlike those of V. cornuta the petals are all very rounded, and they may be violet or yellow, or parti-coloured. The species is found generally from about 2,800 to 4,200 feet in the south of Italy, usually in grassy places. In the hills above beautiful Amalfi the gorgeousness of its blossoms attracts the casual visitor from Naples. The more strange therefore that it may be sought in vain in English gardens. In 1926 I had two plants sent to me, one labelled V. splendida and the other V. splendida hybrida. These two have yielded themselves complaisantly to propagation, but I am still in doubt as to the pureness of descent.

V. stagnina, Kitaibel, should be known as V. persicifolia, Roth. It is most confusing that these names should have been made to do duty for so many species—the former for V. montana and the latter for V. pumila, V. elatior and V. stagnina. In this medley there are three distinct species—pumila, belonging to the canina persuasion, and elatior and persicifolia belonging to the elatior persuasion. V. persicifolia is a plant of marshes and damp woods, distinguished from the well-known V. elatior by its smaller blossoms, smaller leaves, shorter stipules, and by being almost glabrous, as well as by the milk-white instead of bright blue flowers. A good diagnostic, when not in flower, is the pale yellowish-green of the plant. It is a native of England (as on the famous Wicken Fen), fairly common in central Europe, and crosses Asia to Irkutsk.

V. Stoneana, House, ranks with V. palmata as one of the best of the American Violets, and has, if anything, larger flowers than those of V. palmata. It may be distinguished by the lesser pubescence, by having the early leaves often undivided, by the flower being darker towards the throat, and by the seed capsules being blotched with purple. It is confined to the New England States.

V. striata, Aiton, is said by Farrer to be well-diffused in cultivation, but I cannot imagine on what grounds, unless it be because the name has stood for V. elatior, V. persicifolia and V. montana, as well as for an American species in its own right. Farrer's description, however, refers to the true American species. This may be from six to sixteen inches when in flower, and even two feet when in fruit. It belongs to the silvestris group, but may be most easily distinguished by the abnormally long fringes of the conspicuous stipules. The flowers, carried on long stems, are white or cream, or flushed with violet, and are clearly marked by the eight or ten purple lines on the lowermost petal, which give the plant its name. The plant forms large clumps, with so many as sixty stems—in this resembling the Belgian V. calaminaria. It is a species of the eastern half of the North American continent, from southern Canada to Georgia, with not distant relatives in Mexico. It has appeared in lists as V. debilis, Michaux; while V. ochroleuca, Schweinitz, a large-flowered form, and V. repens, Schweinitz (not the true V. repens), are other names. It frequents damp and shady ground, especially along streams.

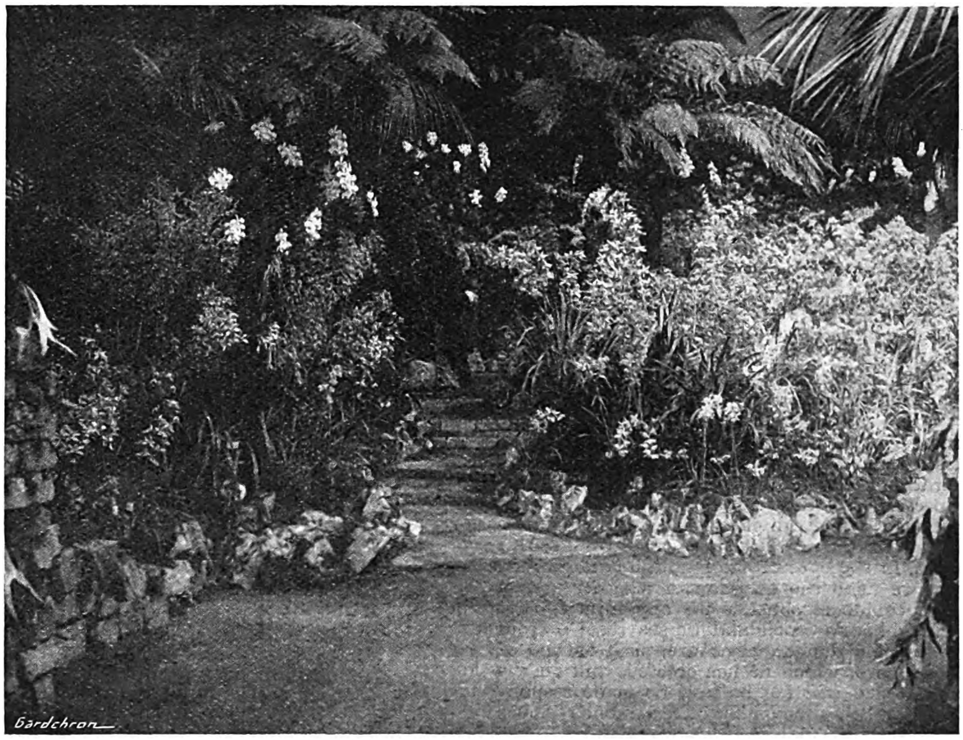

FIG. 150.—GHENT QUINQUENNIAL EXHIBITION: VIEW OF PART OF MESSRS. SANDERS' EXHIBIT OF ORCHIDS.
(see p. 299).

V. suavis is a name now abandoned. V. suavis, since Marschal Bieberstein originated the species, has meant as many different names as botanists. Farrer makes V. tolosana as well as V. Beraudii a synonym, but the former appears to be the true V. sepincola, Jordan. The four species, V. sepincola, Jordan; V. Wolfiana, Becker; V. austriaca, A. and J. Kerner; and V. pontica, Becker, are now grouped by Engler and Prantl as coming under the collective species V. sepincola, and as occupying a midway place between V. odorata and V. alba. It may be diagnosed principally by the blue flowers being white almost to their middle point; by the bracts on the flower stems being below the middle; by the leaves being broadly ovate; by the stolons being short, and often underground; and (if you look more closely), by the rostrum of the style being horizontal. There seems no reason to suppose that the flowers are more fragrant than in either V. odorata or V. alba. V. pontica is native to Asia Minor, the Caucasus, Turkestan and Kashmir. I had a plant by the courtesy of Mr. Bartholomew, which has propagated easily; also seeds from abroad which are as yet untried. These have come to me under the name of V. suavis. The true species may be obtained from the Botanic Garden at Tiflis.

V. subvestita, Greene, although referred to V. arenaria (V. rupestris) by Britton and Browne in their first edition, is given as a distinct species in the 1913 edition. Brainerd, however, in 1921, does not mention it. Becker gives it as the representative in North America of the collective species V. rupestris. There, for the present, the matter may end.

V. sudetica, Willdenow, is the sub-species sudetica of V. lutea, taking its name from the Sudetes Mountains between Silesia and Czecho-Slovakia, on which it is found as also on the High Tatra of the Carpathians, in Hungary and Styria, etc. It is almost invariably yellow and is not found in the Vosges. The confusion that has arisen between the two sub-species sudetica and elegans has been discussed in *The Gardeners' Chronicle* of July 9, 1927, under V. elegans, and of July 10, 1926, under "Viola species in Catalogues and Lists."

V. sulfurea, Cariot, should be V. odorata var. sulfurea, Rouy and Foucauld. It is a specially pretty Sweet Violet, yellow, with apricot centre and violet spur. I have not found it as leafy as the type. Farrer makes it the same as V. Vilmoriniana, a form I do not know; but the plant sent out by MM. Vilmorin as V. Vilmorini, Delac et Motte, which I had for long assumed to be the sulfurea variety, turns out, now that it has flowered, to be a chalk-white Violet whose identity is as yet not determined. *E. Enever Todd, Lt.-Col.*

(*To be continued*).

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THE LAW RELATING TO FENCES AND FENCING.

THE problems which the law relating to fences and fencing embraces are many and diverse, and they are cropping up somewhere almost every day. Let us look at a few of these questions to which we shall later give our consideration: A and B are owners of adjoining properties, and they both claim that the fence or hedge which divides the two properties belongs to them. How are they to discover who is, in the eyes of the law, the true owner? Then we have the question of whether a man may be made responsible for any injuries that his neighbour's stock and horses receive from a fence of a dangerous nature, such as one of barbed wire, which he has erected, and on the same subject whether he may be made responsible for injuries a member of the public receives as a result of his erecting a dangerous fence abutting on a public highway. Lastly, we may give our consideration to the rights and responsibilities the law gives and casts upon the owner of a hedge or fence.

In the first place, with regard to the ascertaining of the ownership of a fence dividing two properties, there are several methods which may be resorted to. The title deeds of the properties in question will frequently show to whom the boundary hedges and fences belong, and they may in addition show by whom they are to be maintained, and in what state of maintenance and repair they are to be preserved. Failing any evidence of ownership in the title deeds, what are known as legal presumptions of ownership may be resorted to.

Thus, there is a presumption, in the absence of any evidence to the contrary, that a man who has been in the habit of exercising acts of ownership over a divisional hedge or fence is in fact the owner of it. In the case of a hedge, such acts as cutting and trimming it, replacing old and worn portions by new plants, and generally acting as only an owner would act, may be considered sufficient acts of ownership to raise a legal presumption that the hedge belonged to the man who has done them. To raise such a presumption, however, the acts must have been done continuously, and not under any agreement, or against the express wish of the owner of the adjoining property. The acts should therefore have been done without interruption or dispute if they are to raise the presumption of ownership. In the case of a fence or a wall, such acts as repairing the fence and keeping it in good condition, or replacing it by a new fence or wall as occasion arose, would give rise to a similar presumption, and the same rules as to interruption and dispute apply as in the case of the hedge.

Where, in addition to the hedge, a ditch or dike divides the two properties (Fig. 151), a further presumption arises, and this is that the hedge belongs to the property "on which the ditch is not," and it is the ditch and not the hedge or fence which divides the two properties. The reason for this presumption is that a man is supposed to dig his ditch up to the limits of his property, and to throw the earth he takes out on to his own land, and it is on this mound of earth that he plants his hedge or builds his fence; it is therefore the ditch and not the hedge which divides the two properties.

Then again, in the case of a wooden divisional fence with outstanding supports, the fence is usually presumed to belong to the property on which these supports stand.

We may now turn our attention to what may conveniently be described as dangerous fences, first with regard to the liability their owners may incur towards the owners or occupiers of adjoining property, and secondly where the fence in question abuts on to a public road—with regard to the liability he may incur towards members of the public using the road.

In dealing with the first question, it should, in the first place, be pointed out that the general rule in English law is that a man may do what he likes with his own property. He may not, however, bring on to it any dangerous thing, which may "escape" from his property and damage his neighbour's property or belongings. The question is, may he be made responsible for any loss sustained by his neighbour for injuries received by his stock from a dangerous fence? In a case before the Courts on this point, the defendants were the owners of a wire rope fence, and from long exposure the strands of the wires composing the rope decayed. Pieces of it fell to the ground and lay hidden in the grass on the adjoining pasture which was occupied by the plaintiff. A cow belonging to the plaintiff swallowed one of the pieces of wire and died, and a claim was made for the loss thus sustained.

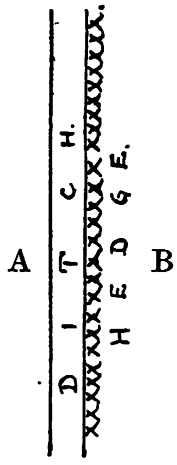


FIG. 151.—DITCH AND HEDGE.

In the County Court the judge awarded compensation to the owner of the cow on the grounds that the defendants had "used and enjoyed their property in such a manner as to damage her (the plaintiff) in the use and enjoyment of her property." The owners of the fence took the case to the High Court, where judgment was again pronounced in favour of the owner of the cow, it being said that the nature of the wire was known to the defendants, that part of it should fall on to the plaintiff's land was a natural result of the decay of the wire, and the pieces being hidden in the grass were naturally liable to be swallowed by her stock.

From this case, and the rule that it involves, it will be seen that great care should be taken to keep in good and safe condition any fences which abut on land used for pasturing, or a claim may be put forward for injuries done to the stock in the field.

With regard to barbed wire fences adjoining a highway, we have to consider the provisions of the Barbed Wire Act of 1893, which provides that where there is a barbed wire fence on land adjoining a public highway, which creates a nuisance, the local authorities have power to order the occupier of the land to abate the nuisance within a certain time (from one to six months). As regards the meaning put upon barbed wire fences, the Act applies to any "wire with spikes or jagged projections," and a nuisance in this connection means a barbed wire fence which may probably be injurious to people or animals using the highway.

This is, of course, a kind of criminal or administerial procedure. What view does the law take of the case where a person passing along a public highway injures himself on a barbed wire fence on land adjoining that highway? In a case on this point some time ago, a man who was using a public footpath in the proper manner and damaged his macintosh coat on a barbed wire fence, sought to recover damages from the owner of the fence. It was held that the fence was so constructed and placed as to be a danger and a nuisance, and the owner was therefore responsible for the damage done to the coat, which was assessed at £2 4s. This case went to the Court of Appeal, where the previous decision was upheld, and as was said then the principle is well illustrated by the authorities that, if there is a structure or excavation adjoining a footway in such a condition that it is liable to do an injury, a person injured may claim compensation for the damage done.

Lastly, with regard to the rights of the owner of a fence, he may, generally speaking, do what he likes with his own, but he should be careful to see that he does nothing which is going to make him liable for any injuries third parties may suffer as a result of his work, and he should also be careful not to infringe any right of light his neighbours may have; on this point the general rule is that after a man has enjoyed a right of light for twenty years this must not be interfered with by his neighbour, the latter may, however, erect any building or fence opposite the windows in question, provided he leaves the owner of the right enough light for ordinary purposes.

Besides being able to change the nature of his fence, the owner may use it as a wall for any building he wishes to put up against it, and he may prevent his neighbour using it for this purpose if he so desires.

As regards the obligations, these may be summed up as preventing his fence becoming a danger and a nuisance to third parties. *H. A. S.*

NOTES FROM WISLEY.

THE best time of year at which to see a garden will depend upon the nature of the garden to be visited, and also upon the tastes and interests of the visitor. If the latter has a preference for any particular kind of flower, as, for example, the Dahlia, it is probable that a garden in which this flower is given prominence would give him more pleasure than one in which this flower is neglected or absent. In the same way, he will prefer to make his visit, if he is limited to a single one, in the autumn rather than in the spring.

Most garden-lovers, however, gain the maximum pleasure in a garden from an abundance and variety of blooms, and there are few better times at which this may be experienced and appreciated than at the present. This is particularly the case with the gardens of the Royal Horticultural Society at Wisley, where are blooming not only spring flowers, such as Anemones, Primroses and Daffodils, but Rhododendrons, Azaleas and Japanese Primulas, together with a splendid variety of ornamental fruit trees. In addition, there has never been such a fine show of alpines at Wisley as those in flower in the new alpine house.

Among the latter it is difficult to single out any particular species or genus as being responsible for this brilliant display, but much of the pink blossom is provided by Androsaces, such as Salmon's variety; vivid yellow patches of

Morisia hypogaea are frequent, while the eye is attracted also by the pale blue of Myosotis Bridgenorth and Omphalodes Luciliae. Several varieties of Primula also stand out, such as a hybrid Primrose raised by Mr. Buxton, who has been carrying out experiments at the Wisley laboratory in the hybridisation of this genus. This plant resembles the common Primrose, except that the flowers are of an attractive and unusual shade of rose-pink. A somewhat similar shade is seen in the flowers of Oxalis variabilis var. rosea, which, however, are yellow at the base. It is a native of the Cape, and in its early stage often presents a curiously symmetrical appearance, as the flowers—or, perhaps, but a single one—stand erect in the centre of a perfectly flat and circular rosette. Another attractive Oxalis is O. enneaphylla, a native of the Falkland Islands, which has crowded, glaucous leaves and large, white flowers, faintly veined with lilac.

Amid this imposing display many smaller plants which would at other seasons attract attention are apt to be overlooked. Among them may be mentioned Laurentia tenella, which is to be found on most islands in the Mediterranean and which possesses blue, Lobelia-like blossoms with white centres. Others are Petrocallis pyrenaica, a Crucifer with white flowers changing to pink, and Pyxidanthera barbulata, which makes a diminutive white and green carpet. Useful carpeting subjects are also to be seen in the blue Houstonia coerulea, and a compact-growing variety of Linaria cymbalaria named globosa, which appears to be considerably less rampant than the type. A handsome plant which has just passed out of flower is Lewisia Tweedyi (Fig. 152), with salmon-pink flowers and spoon-like leaves.

Among the many attractive dwarf flowering shrubs in bloom in the alpine house are Polygala Vayredae, the flowers of which have creamy-white wings and petals tipped with brown changing to yellow; Daphne arbuscula with mauve flowers, and Daphne rupestris grandiflora with pink and deliciously fragrant flowers. Another dwarf evergreen is Rhodothamnus Chamaecistus, a Rhododendron-like plant with pink flowers, which prefers a cool, peaty soil and a rather shady position.

Around the pools at the bottom of the rock garden Saxifraga peltata is in flower, and Osmunda regalis is uncoiling its pink fronds, while by the side of the pools, higher up, a fine show is made by the double-flowered Caltha palustris and Primula Juliae, the purple of which contrasts well with the golden yellow of the Marsh Marigold. Bright colour is also provided by Violas, some of the most conspicuous being Viola Therkildsenii and V. gracilis Lassie, which make large sheets of blue and violet. Other bright patches consist of Aubrietias, many named varieties of which have been planted in the walls surrounding the alpine house frames, and may easily be compared. Among those blooming well are Prichard's A.1., Gurgedyke, Fire King and Taplow Rose. In the small rock bank, near the laboratory, Veronica filiformis is in bloom. It has spread over a large area and resembles a mass of blue confetti. Veronica satureioides, another dwarf blue Speedwell, is also in bloom.

Much of the projected alteration to the Pinetum has been carried out, and visitors cannot fail to be impressed with the vastly improved effect brought about by the new, broad, grass walk. The latter leads into a wood which has already been planted in part with Rhododendrons. The walk will continue through the wood to the existing orchard, which will eventually be laid out as a pleasure garden, on natural lines.

The borders on each side of the newly made path into the rock garden from the laboratory, although recently planted, are not wanting in bloom, and are ornamented with many fine coloured Primroses and Anemones. Among the latter are forms of Anemone coronaria, Anemone rosea superba, with deep pink flowers, and A. scythinica, on the reverse of whose petals is a steely blue shade, such as is seen in the foliage of many Eryngiums. Included among the varieties of Primula are fine, dark blue Primroses and some Cowslips which lack the brown mark almost invariably found on each petal of plants growing wild.

In the Azalea garden there is still a fine show of well-known varieties of Daffodils, such as Emperor and Narcissus poeticus recurvus. The soil is extremely wet, yet the bulbs do better here than anywhere else in the garden, and are remarkably free from damage by Narcissus fly. It is possible that the grubs of the latter pest cannot thrive under such wet conditions. In contrast to the huge flowers of many Trumpet varieties are the diminutive flowers of the tiny Narcissus juncifolius, which is in bloom in the rock garden moraine. Another pretty bulb is Romulea Bulbocodium, with a Crocus-like flower of pale lilac having a yellow centre tinted golden-brown.

In the field garden, many beautiful ornamental fruit trees are in bloom, such as Pyrus × purpurea, and P. Eleyii; and shrubs such as Berberis Darwinii and B. stenophylla, with their golden rain of blossom. Another charming shrub in flower is Viburnum Carlesii, with its very fragrant flowers. They do not last long, however, when cut, and the shrub is not a vigorous grower. Beneath the large plant of Viburnum Carlesii at Wisley are Dog's Tooth Violets in bloom, such as Erythronium Victoria, E. minus and an attractive, pink-flowered variety which is unnamed. *J. E. Grant White.*

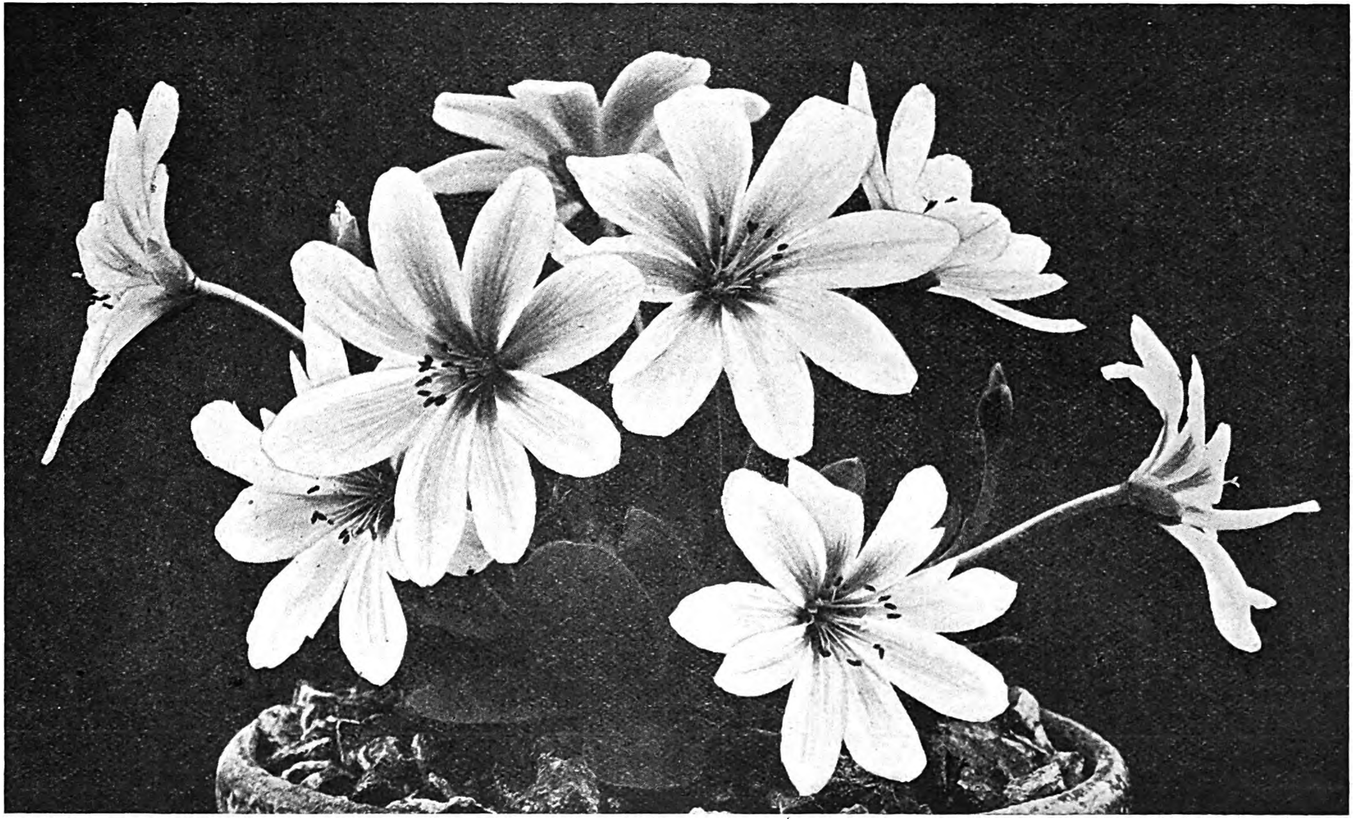


FIG. 152.—LEWISIA TWEEDYI AT WISLEY.

NOTES FROM A WELSH GARDEN.

AMONG the April-flowering rock garden Primulas, those of the P. pubescens (nivalis) set are again proving their great merit. Not only have these charming little plants come unscathed through a very trying winter, but they are blossoming with more than usual freedom. Mrs. Wilson is, of course, the most generous of bloom, the plants being literally covered with masses of rich lilac-purple flowers whose rich fragrance is often perceptible at some distance. P. p. Faldonside is a bold blood-crimson; Ladybird a deep red; The General has flowers of a curious rosy terra-cotta; Ruby is a vivid ruby-crimson with a white eye, and one cannot overlook the delicate loveliness of the snow-white P. p. alba.

In the P. marginata section the type species ceased flowering some weeks ago, but its foliage is now at its best, and it is so attractive that the plant would be worth a good place for it alone. P. m. grandiflora, with rather larger blooms of a darker shade, is usually a little later, and is now flowering; but incomparably the finest of this group is the assumed hybrid, Linda Pope.

From tufts of dentated leaves, broader but otherwise much like those of the type, this plant yields good heads of flowers on three-inch stems, each bloom being nearly one inch across and of a most entrancing shade of cool lavender-blue, with a white eye. From the latter part of March for at least a month one is granted a succession of these exquisite bloom clusters, and the rare old plant is happily possessed of a fairly robust constitution. Of course, it increases but slowly, but I think it needs better soil than that which is generally accorded the rest of the marginata group.

Shortias, both in the woodland and along a well-raised bank by the water, have opened the first of their beautiful pink and white blooms in fair quantity, but the choice little S. uniflora grandiflora rosea never seems to go ahead with the vigour of the rest. Why this is so it is difficult to say, for the plant referred to is given similar conditions as are appreciated by the others, and under the same treatment that somewhat fastidious ally of theirs, Schizocodon soldanelloides is prospering and flowering with the utmost goodwill. Along the same bank some colonies of Erythronium revolutum Johnsoni and E. r. White Beauty, with very large flowers in a bright carmine-rose and snow-white respectively, look very delightful among clumps of the rising shoots of Gentiana asclepiadea.

Epigaea repens is such an uncertain quantity here that one is grateful for such "small mercies" as a single spray of blossom. The star-shaped, waxen blooms of this shy haunter of the shade are of a peculiarly pure whiteness and deliciously fragrant, and the plant seems tolerably happy in a cool bed of leaf-mould which it shares with Philesia buxifolia. Hard-by is another shade-loving North American plant, Sanguinaria canadensis, in a large-flowered form called, I think, S. c. grandiflora. The spring woodland garden affords nothing more lovely than the milk-white blossoms of the Bloodwort emerging from the dove-coloured scroll of folded leaf in which each bud is cradled. Some Californian Trilliums in this company are already opening their three-pointed stars of rose and white.

Among Ericaceous plants, that interesting little shrub, Phyllothamnus erectus, is a singularly beautiful object this month. Although the foliage bears a close resemblance to that of Phyllodoce (Bryanthus) empetriformis, the rose-pink, solitary flowers, which are borne on long stalks in clusters at the tips of the upright branches, are broadly funnel-shaped like those of the Azalea. Each bloom is about half-an-inch across and cut into five triangular segments. Excellent as it is, this charming shrub does not eclipse the beauties of P. empetriformis, a well-grown specimen of which is meritorious enough in its own way to hold its place in any company. Although it does not usually show colour until the later summer, that uncommon native of the north, P. coerulea, is already full of colour. As often as not, this species flowers very meagrely here, but the severe winter or some other influence has this season stimulated it into unusual precocity and abundance of flower. That other allied moorland native, Andromeda polifolia, is also doing uncommonly well, so well, indeed, that one feels that this is a dwarf shrub which might well claim a wider appreciation. The glaucous hue of its narrow-leaved foliage, together with the vivid shell-pink flower clusters produce an exceedingly taking blend of colours. Cassandra calyculata var. nana is proving a useful companion plant for the Andromeda, while above and behind these is Vaccinium pennsylvanicum heavily hung with racemes of crimson buds, and the rosy-white of its opening bells.

By the stream-side, an old plant of Lysichitum camtschatcense is a conspicuous object with its big, butter-yellow spathes. This noble Aroid, a native af the Pacific slope of British Columbia, is equally striking as a foliage plant throughout the summer. It seems perfectly hardy, and produces self-sown seedlings here in some quantity. A broad drift of Omphalodes cappadocica sloping to the stream is always singularly fascinating at this season, the lovely blue of the large and abundant flowers harmonising in a delightful manner with the yellow of Caltha polypetala and the earlier Globe Flowers, while fluttering over the blue are the snow-white ribbons of a low and spreading Magnolia stellata.

In the woodland, the undergrowth affords nothing more beautiful than the various blue and purple varieties of Anemone nemorosa, such as Allenii, Robinsoniana, Blue Bonnet, cornubiense and others. The cheerful blossoms of A. trifolia, milk-white and very dainty, make a telling contrast with the blue of A. apennina, nor may one overlook the gleaming yellow of A. ranunculoides. The vivid carmine of Cyclamen repandum which might be too virulent a tone under some circumstances, is in every way desirable among the rising green of spring herbage, and another delightful woodlander in a clear rose-pink is Oxalis Acetosella var. rosea.

Although it does not flower with the prolificacy of the type, Erica mediterranea hibernica is always the first of its species to give colour here, and there is no little charm in its blending of glaucous foliage and pale rosy blossoms. The form usually listed as E. m. h. Brightness, which, I believe, is also of Irish origin, is a shrub of higher garden merit, with flowers in abundance of a stronger tint, and a foliage of a more decided green. All the white-flowered Tree Heaths came through the very severe winter with but little injury. They are now (mid-April) at their best, and before these lines are in print they will be joined by the finest of all the taller species, E. australis, which has happily proved equally resistant to some 20° of frost. Young plants, however, of most of the Tree Heaths were badly injured, and small, self-sown seedlings of E. lusitanica were destroyed.

Among the taller shrubs of an open woodland slope, Exochorda grandiflora never fails to arrest admiration at this season. A deciduous species, the slender, willowy boughs break in early spring into a soft and delicate green, and no sooner has this been accomplished than the extremities of these elegant branches produce finely-tapered racemes of large, pure white blossoms, often as much as one foot in length. Even at a season when many of the best of flowering shrubs are in bloom, E. grandiflora easily holds its own. In my experience this species is not equalled, much less excelled, by E. Giraldii. *A. T. Johnson, Ro Wen, Conway, North Wales.*

THE GENUS PRIMULA.

(Continued from page 283).

AURICULATA (Lam.) Eared P.

(Auriculata.)

A SMOOTH, tufted perennial, varying remarkably in size, according to the condition under which it is found in nature. Leaves two to ten inches long, oblong, broad at the tip, smooth, margins widely and bluntly toothed, or nearly entire. Flower stem four to fifteen inches tall, bearing an umbel of about half-a-dozen nodding, rose, lilac, or violet coloured flowers with white eyes. Corolla half to three-quarters-of-an-inch across, divided into five broadly heart-shaped lobes; tube one- to one-and-a-half inch long, three times the length of the calyx. Flowers from May to July.

This species is usually found in moist pastures, although it sometimes affects comparatively dry, rocky situations and ranges from western Asia Minor to the Caucasus, and eastward to Afghanistan and the Altai. Introduced in 1825.

Culture: Plant in a moist, half-shady spot in fibrous loam, peat and sharp grit. (*Bot. Mag.*, 392, under P. longifolia.)

AUSTROLISTERI (Balf. f.) Southern Lister P.

(Sinenses.)

This perennial plant produces a loose tuft of Ivy-like foliage on slender stalks springing from a rather stout, somewhat woody rootstock.

The leaf blades are three-quarters- to one-and-a-quarter-inch across, rounded or rather pointed, deeply heart-shaped at the base, slightly downy, with shallowly lobed, coarsely toothed margins; they are borne on slender stalks usually about twice the length of the blade. The flower stems are usually shorter than the leaves, and bear a loose umbel of about half-a-dozen blossoms on smooth stalks of varying length; they are probably pink or lilac in colour, and resemble those of P. Listeri in shape, but are smaller. Flowers in May.

This plant is probably a microform of P. Listeri, and is found on the Manipur and Naga Hills of north-eastern India, at 8,000 to 9,500 feet above sea-level.

Culture: Grow it in good fibrous loam, leaf-soil and sand, and treat it as a frame or cold greenhouse plant.

BAILEYANA (Ward). Bailey's P.

(Rotundifolia.)

An exquisite little species with a small rosette of rounded leaves with toothed blades one inch across, on slightly channelled stalks about three inches long; the under-surface of the whole leaf is powdered with white meal. Flower stem four to six inches tall, slightly mealy below, more so upwards, bearing an umbel of rich violet flowers with a small white eye. Corolla, five-eighths-of-an-inch across, flattened, with broadly heart-shaped lobes and a tube five-eighths-of-an-inch long. Flowers in July and August.

This species is found on grassy cliffs among Rhododendrons and dwarf shrubs on the mountains of south-eastern Tibet.

Culture: Plant in a half-shady spot in the rock garden in good loam and peat; keep moist in summer, well drained in winter: probably more or less monocarpic.

BALDSHUANICA (B. Fedsch.). Baldshuanican P.

(Farinosa.)

Perennial, with a close tuft of numerous obovate, blunt leaves, from one inch to two inches long, narrowing towards the base into a fairly long stalk, dilated at its base into a sheath; margins slightly scalloped, undulate, upper surface smooth, underside slightly mealy. Flower stem three to four inches tall, bearing a dense, many-flowered umbel of lilac-coloured blossoms, with very deeply notched lobes; tube twice as long as the calyx.

This species is found in damp, rocky places, on the mountains of south-eastern Turkestan, at 2,000 to 5,000 feet above sea-level, and is closely allied to P. algida.

Culture: As for P. algida.

BALFOURII (Lévl.). Balfour's P.

(Soldanelloides.)

A very charming little annual with oblong leaves, three-quarters- to one-and-a-half inch long, with slender stalks; their blades are downy beneath and are margined with irregular saw-like teeth. Flower stem very slender, one inch to three inches long, mealy upwards, bearing a one-sided spike of nearly stalkless, bell-shaped, deep blue blossoms, about a quarter-of-an-inch across, with rather short tubes and oval, toothed lobes.

This species is very closely allied to P. spicata, but differs from that species in its almost tubular corolla, etc. Flowers in August.

It grows in open mountain pastures on the eastern flank of the Tali range, western Yunnan, at 10,000 to 11,000 feet above sea-level.

Culture: Light, fibrous loam, and a fairly damp spot are indicated.

BARBEYANA (Petitm.). Barbe's P.

(Malacoides.)

A delicate little annual with a rather erect tuft of thin oval leaves, half- to three-quarters-of an-inch long, heart-shaped at the base, on stalks one to one-and-a-half inch long, margins divided into small, regular, oval, pointed lobes. Flower stem six to nine inches tall, smooth, slender, bearing one to three superposed umbels of lilac-coloured blossoms, three-eighths- to half-an-inch across, with broadly heart-shaped, notched lobes.

This little plant is considered to be a microform of P. Forbesii, and very much resembles a dwarf P. malacoides. It it found at Ta-tsien Lo, in south-eastern Tibet.

Culture: Sandy, fibrous loam and leaf-soil, in a half-shady spot are indicated.

(To be continued.)

CULTURAL MEMORANDA.

BEDDING LOBELIAS.

The various strains of bedding Lobelias are exceedingly popular as edgings to beds and borders, and if seeds were sown early in the year the seedlings should now be pricked out into boxes. Never allow the seedlings to become drawn and spindly in the seed pan.

When they have established themselves and are growing freely they may be cut over with a sharp knife; this will cause them to break freely from the base, thus ensuring bushy plants at bedding out time.

Lobelia gracilis and others of spreading habit are excellent as edging plants for stone or lead vases on terraces, etc., and also for use in hanging baskets; in white stone vases the various blue shades of the different varieties are very effective. If they are grown in confined spaces, such as baskets or small vases, good, rich soil should be used and special attention given to watering.

When the plants are well established frequent waterings may be necessary and regular applications of a reliable plant manure may be given to keep them growing and in good health. If these subjects are allowed to get thoroughly dry when in full growth, they quickly fail and may not recover throughout the whole season. *J. G. W.*

GARDEN MANURES FOR MAY.

It is an axiom of soil science that every ordinary soil tends to lose its humus content sooner than its mineral plant food, and many so-called exhausted soils are injured in their physical condition rather than exhausted of their fertility. All experiences prove that frequent tillage, and the addition of humus-forming material, quickly and invariably ameliorate the condition of, and improve the soil, and it is folly to attempt to controvert facts by mere speculation. Nature makes the soil richer, both by fining and digesting the mineral matter, and by ameliorating its physical condition through the incorporation of humus or organic matter. The fining process may ultimately cease, but where growth takes place, the addition of humus never ceases and the final and complete enrichment of the soil therefore may come largely as the result of the incorporation of cellulosic material with it.

It is obvious, therefore, that the methodical collection and conservation of every scrap of green garden refuse should be a routine of garden work, for under existing conditions there is no other way of ensuring an adequate supply of bulky manure. May is generally a month of luxurious growth; not only will piles of lawn-mowings be constantly accumulating, but tidiness will decree that extended areas containing naturalised, early-flowering bulbs must be mown, this adding considerable weight of this type of material; vegetable crops will yield a further amount of refuse, and the remnants of spring bedding may be discarded to make way for summer flowering subjects. All this material should be saved and decomposed to form the basis of manuring for following crops.

Although chemistry determines the amount and kind of plant food in the soil, it cannot tell just how useful this food may be to the plant. This depends on the physical condition of the land, or upon the relation of the soil to warmth, moisture, air and mechanical constitution, all largely controlled by the humus content. The plant is not simply a passive agent taking in the food which is presented to it, but it is actively engaged in searching for and appropriating food. The better and more comfortable the plant, the more food it may appropriate from a given soil, for as an animal will not accept the most tasty ration if it is physically uncomfortable, so a plant cannot derive the full benefit from the most concentrated fertiliser if its rooting medium is at fault.

While, therefore, the addition of concentrated fertilisers cannot be considered a fundamental corrective of poor lands, it should be considered as a very powerful supplement to the treatment of soils for increase of crops, and the commonest cause of unsatisfactory results in the use of fertilisers is that of indifferent preparation. Poorly cultivated land not only refuses to give up its own stores of wealth, but may delay and even preclude the good results from plant foods which may be added. If the physical and environmental conditions are right, the addition of concentrated plant food should be felt and appreciated, and the reasonable use of it, in its various forms, during the present month of active growth should prove a highly profitable investment.

Most growers of bush fruits, for example, if they had access to liquid manure from the cowsheds would consider it highly desirable to give liberal applications to bushes that are heavily set with fruits but failing this they would probably leave their bushes to mature their crops without extra assistance, yet a dressing of sulphate of ammonia and sulphate of potash, applied in showery weather, would supply the same elements and give equally good results. There is no doubt whatever that a more regular use of concentrated fertilisers in our fruit plantations during the period of active growth, and particularly for trees carrying heavy crops, would increase materially the quantity and quality of fruits produced, and there is considerable evidence to show that a tree insufficiently assisted to mature its crop of fruits fails to produce a normal crop the following year.

During the present month maincrop sowings of various roots, such as Carrots, Beet, Salsify and other vegetables, are being made, and many gardeners like to apply a light dressing of superphosphate, and work it into the surface soil before sowing. This practice has much to recommend it, for apart from the probability of increased weight of the crop, it generally hastens development, so that the young plants are ready for hoeing earlier, and grow more quickly out of the danger period of attack from pests.

Neither superphosphate nor any other fertiliser gives such good results in a drought year, but some astonishing results have been shown from the use of superphosphate on some soils in normal seasons. It is a common supposition that the use of superphosphate is a cause of acidity in soils, but Dr. Henry G. Knight, chief of the newly-organised Bureau of Chemistry and Soils in America, says that this belief is not well-founded, that modern research has shown that the properly-manufactured superphosphate of recent years contains no free acid, and that the evidence of fertiliser experiments carried out by the Department and by several State Agricultural Experimental Stations, shows that the use of superphosphate is not a cause of acidity in soils.

The world is becoming conscious of the importance of artificial fertilisers, and anything which hampers their wise and adequate use should be removed. Material reductions in the cost of plant food in commercial fertilisers have taken place since 1919, the high year of cost, when the prices of all commodities were absurdly high, and this fact has brought about a considerable increase in the number of high-grade mixtures. The price of some of these more or less complete manures remains unnecessarily high, but a general review of the numerous facts in relation to commercial fertilisers furnishes clear evidence that, on the average, complete fertilisers contain a larger percentage of plant food to-day that at any time in the history of the industry. This is a reassuring fact of tremendous importance to growers. *W. Auton.*

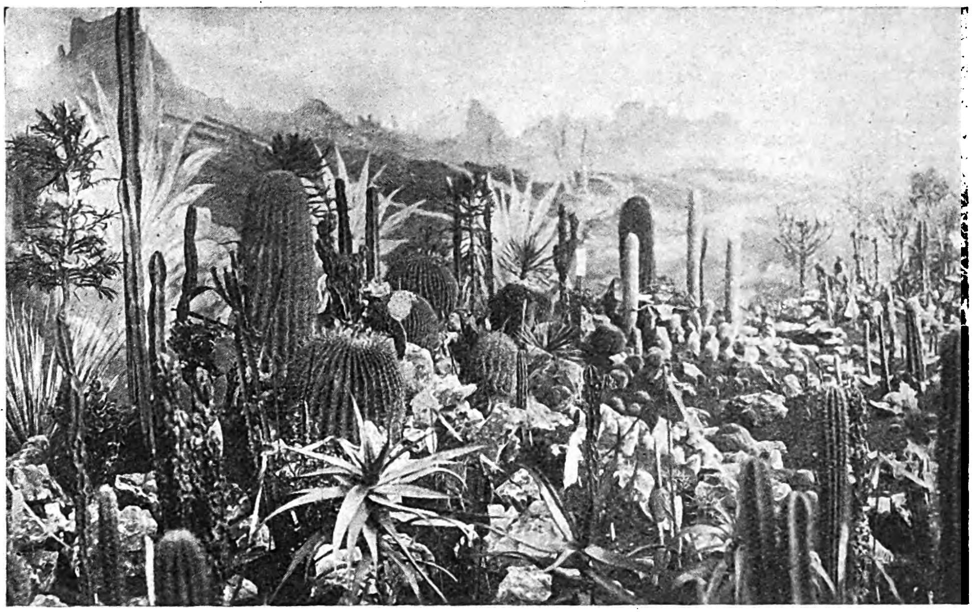


FIG. 153.—GHENT QUINQUENNIAL EXHIBITION: GROUP OF CACTI EXHIBITED BY M. FRANZ DE LAET.

(see p. 322).

LAW NOTE.

MERCHANDISE MARKS ACT PROSECUTION.

Probably a unique incident in the Rose world occurred at the Guildhall, Canterbury, on April 17, when the Ministry of Agriculture and Fisheries prosecuted Albert Mills, trading as the Haven Nurseries, Canterbury, for selling to the inspector of the Ministry six Roses guaranted as English-grown, which were, in point of fact, Dutch.

The counsel for the prosecution stated that the defendant had been widely advertising "Guaranteed English-grown Roses," and in response to complaints received, an inspector was sent to investigate, with the result that proceedings were taken under the Merchandise Marks Act of 1887. In the witness box the inspector stated that when he paid a visit to the defendant's nurseries he found men engaged in replacing foreign labels with the kind usually used in the nursery trade. He purchased some of the Roses with the guarantee that they were English-grown.

Under cross-examination by the defendant's solicitor, he stated that he submitted these Roses to experts who, on inspecting the roots and taking into account the way that the trees had died back, and of the soft nature of the wood on the trees, unhesitatingly declared them to be Dutch-grown.

Shortly after the first expert witness for the Crown, Mr. L. J. Cook, had gone into the witness box, the defendant's solicitor said that he was prepared to admit that despite the guarantee, the Roses in question were Dutch-grown.

Defendant stated that when English-grown Roses were stipulated he supplied them, but otherwise Dutch were sent. Under cross-examination, he could not explain why his advertisement only made reference to guaranteed English-grown. He did not know that several people had made complaints about his Roses, as he did not attend to office work himself. He admitted that the National Rose Society had insisted on his removal of the statement in his advertisements, and that the Haven Nurseries were members of the National Rose Society.

Defendant's solicitor asked the Bench to treat the affair as one of an advertisement puff, but the Mayor stated that he regarded it as a serious offence. Defendant was fined £10 for selling six Dutch-grown Roses as English-grown, and had to pay £33 costs in addition.

HOME CORRESPONDENCE.

Primroses and Lime.—The article on the above subject on page 248 of *The Gardeners' Chronicle* has caught the eye of my friend, Mr. F. Stern, and he has been kind enough to send me a note of his experience in the cultivation of Primroses in his garden on Highdown Hill on the Sussex coast. Those who know that interesting place will realise that there is literally no escape from the chalk for anything in the garden. so that calcifugal species have no chance. Mr. Stern's list of species which succeed at Highdown, includes the following Primroses: P. Forrestii and P. redolens; P. Beesiana, P. chungensis, P. helodoxa, P. japonica and P. pulverulenta; P. lichiangensis and P. latisecta; P. involucrata, P. luteola, P. rosea and P. tibetica; P. malacoides; P. Winteri and P. Roylei; P. Florindae, P. microdonta var. alpicola and var. violacaea, P. secundiflora, P. Waltoni, P. prionotes and P. limnoica. His experience carries us a little further than I was able to go in the article referred to, because he finds that two new Chinese species, P. microdonta var. alpicola and P. prionotes, as to which I was doubtful, will suffer chalk. Mr. Stern adds that he cannot write with certainty about P. sikkimensis and P. pseudo-sikkimensis, but experience already gained elsewhere shows that the former is not altogether intolerant of chalk, although it grows better where there is none. His list of failures includes:—P. capitata P. Mooreana, and P. Littoniana; P. chionantha and the American P. Rusbyi, as well as P. pulchella and Omphalogramma vinciflorum. The inclusion of the first two is puzzling, as I had them for years in calcareous soil. It may be, however, that Mr. Stern's dose of chalk was too much for them. He adds that from his experience it would seem that certain sections, such as Candelabra, Cortusoides, Denticulata, Farinosae and Sikkimensis, tolerate lime so long as other conditions, *i.e.*, moisture, shade, etc., are satisfactory. On the other hand, he considers that certain sections, such as Capitatae, Muscarioides and Nivalis are poisoned by lime. In connection with this, it hardly seems that we are yet justified in referring to any particular section as altogether calcifugal, and further experience may, perhaps, prove that in each of the sections there are species which are lime-tolerant or intolerant, as the case may be. Since writing the above, confirmation of the calciphilous qualities of P. secundiflora has come from Mr. Robert Dimsdale, whose garden at Lechlade is an oolitic limestone, and from Sir William Laurence, at Burford, where chalk prevails. It seems certain, therefore, that this species may be included without hesitation in the list of lime-tolerant Primroses. Although it has no bearing on the question of lime in relation to Primroses, the experience of Mr. C. T. Musgrave with P. microndonta var. alpicola should interest those who take the cultivation of the genus seriously. Mr. Musgrave finds that this variety has seeded itself about at Hascombe Place, and a Primrose that does that is assured of a future in this country. *A. Grove.*

Lilium Nomenclature.—I have read with interest Mr. Grove's article on "The Sterility of Lilium tigrinum," and it appears to me quite time that a recognised standard of nomenclature was adopted for the genus. For this purpose, Mr. E. H. Wilson's *Lilies of Eastern Asia* can hardly be surpassed, considering the world-wide experience of the author; it excludes of course, the Lilies of America, but in their case the same confusion of names does not seem so evident. In Mr. Grove's article, one finds the name Lilium warleyense used; if one is permitted to quote from Mr. Wilson's work in reference to this, we read: "If names with a few explanatory words from the pen of a reporter of a flower show be accepted as valid, then there is no hope of common sense having a voice in the naming of plants." Thus is the above name dismissed, while the correct name is given as L. Willmottiae. Similarly, L. sutchuenense covers both L. Davidii and L. Willmottiae; but in Mr. Grove's article I imagine that the former is meant. L. pseudo-tigrinum includes no fewer than four Lilies, namely, L. Leichtlinii var. Maximowiczii, L. Willmottiae, L. Davidii and L. Bakerianum var. Delavayi. Small wonder that confusion reigns, and yet all these Lilies are easily distinguishable from one another. L. leucanthum var. chloraster is known variously as L. centifolium, or Farrer's No. 316; but the most extraordinary case would appear to be that of L. Davidii, which was given an Award of Merit by the Royal Horticultural Society on two distinct occasions. Firstly, as L. Bioudii, on September 8, 1914, and secondly as L. pseudo-tigrinum, on July 27, 1920, the former award being to Mr. Amos Perry, and the latter to Messrs. Bees, Ltd. *B. O. Mulligan.*

The Finest Flowering Tree.—Under the above heading, in your issue of March 24, p. 219, Erythrina Crista-galli is mentioned as being more of a shrub than a tree. I have grown it as a pot plant in the conservatory, and it certainly was very striking, and a specimen twenty feet high, mentioned by your South African correspondent as growing out-of-doors at Durban, must be a thing of beauty. Its treatment and growth resemble that of Hydrangea paniculata, only, instead of drooping, it is upright, its stout stems terminating in a bold spike of coral-red flowers. These flowers remind me of a lobster's claw, both in shape and colouring. The stems are green and are thorned like the Rose. After flowering, if it is stood out in the open to ripen the wood, and then cut hard back when taken in for the winter, it may be repotted if required and started gently afresh in a cold greenhouse or vinery, or Peach-house, when it will make growths from three to five feet tall, according to the size of the stock. Anyone who can grow Hydrangea paniculata may grow Erythrina Crista-galli. It is a very striking plant, but is rarely seen, the reason being, I suppose, that it is not sufficiently well known. *George Murray, Stanton Court, Wiltshire.*

Failure with Strawberries.—I have been much interested in the correspondence in your columns, and can fully sympathise with all gardeners who have failed with their Strawberries. It must be very harassing to those who are expected to supply two or three hundredweights of fruits for preserving besides having to find, at least three times per day, good quality dessert fruit, and in addition to this many baskets of fruit for the friends of their employers. To find any satisfactory excuse must be a very difficult matter, particularly if told that a garden nearby has splendid crops. Were I, as formerly, engaged in growing quantities for private use, and faced with disease in my plants, I should never let a bed remain longer than two years. Some varieties I should only allow to remain for one year, and I certainly should grow them in several parts of the garden and experiment with and without stable manure and chemical manures. I advise all gardeners to give their plants a good dressing of sulphate of ammonia at once, and another good dressing just before the beds are strawed down. This latter item should on no account be carried out before the flower trusses are well up. The sulphate should be placed round the root area and well hoed in. Hoeing is easily accomplished if the beds were manured and forked over in the winter. There is nothing like having the top three inches of soil loose so that the sun and air may do their part, and also that the rains may easily percolate and pass away quickly. Red spider has a very weakening effect in some districts, but this would not cause the serious troubles of your correspondents. How time flies? It is exactly twenty-four years ago since Mr. H. Markham, myself and others were engaged for several weeks in wordy combat in *The Gardeners' Chronicle* on the cultural notes written at the time by Mr. H. Markham, and which I had the audacity to challenge. In some districts slugs are a great curse; to those who are troubled with this pest I cannot do better than recommend them to try the dressings of sulphate of ammonia; they will find it will soon clear the ground of slugs. *A. Jefferies, Hertford.*

——For some years our Strawberry plants have been losing their vigour, and I have come to the conclusion the trouble is caused by the polluted atmosphere; we are in a district with a large population and many coal mines, and it is in the winter after a fog that we notice the foliage is scorched. Given a few calm days followed by a fog, and the air is tainted with carbon mon-oxide and other poisonous gases which a drizzling rain brings down. Violets, Polyanthuses and Primroses all suffer in the same way. It would be of interest to learn if gardens far from those centres of poisoned air are free from Strawberry trouble. We need a more resistant variety of Strawberry or a different method of cultivation. The finest Strawberries I have seen were grown on ridges of soil two feet high and three feet six inches from centre to centre, at the late Mr. Will's garden, near Clifton. I am doing my best to try and keep ours going by placing soil around the crowns close up to the new foliage, as I find the plants have a tendency to raise themselves out of the ground, especially after a frost like we had last Christmas. *J. P., Aberdare.*

Characters and Testimonials.—Your article on the above subject should be of interest to all employees. In practice, these are divided into three different groups:—(a) testimonials, (b) characters, and (c) references. (a).—Testimonials are given by employers covering the success or otherwise of work done. Almost invariably these are given (for the asking) on the completion of an engagement. This is as it should be, and is fairest for both employer and employed. If the testimonial is a bad one, the recipient has a chance of lodging a protest, and in these days of accurate book-keeping, a record of his business achievements should be readily available. This may be rendered difficult (in rare cases where an employer fails to give a testimonial) after the lapse of several years. (b).—Characters are more of a personal nature, and may be, perhaps, better furnished by men in good positions who have known the employee personally for the greater part of his life. Such a person would be most likely to give a more correct character than a disgruntled employer, for instance. (c).—References usually cover both (a) and (b), but are not so satisfactory, as in these days of severe competition the man who applies for a post and gives references, should he fail to get the appointment, naturally suspects that something detrimental to his interest may have been said or written, and he is powerless to do anything. I should like to see our profession brought up to date, and for it to become a custom (if not law) that testimonials can be demanded by an employee on the termination of his work. Also that there should be a register kept of employers, and that prospective employees might obtain from this source information with regard to those who offer situations. They would then know what to expect, and those employers who play "ducks and drakes" with their employees would not find it so easy to fill their places. Of course, for the purposes of such a register, the grievances of one ex-employee would not bear much weight, but the accumulated evidence of many would be a warning to the would-be employee. Good employers should have no objection to such a register, and the other sort would not matter very much. In applying personally for a post the original testimonials should always be carried on one's pocket, to show on request; but it is very important to only send copies by post. In conclusion, an employee would be wise to remember that *promises* have no legal weight, and everything such as salary (and periodical increases), holidays, sick pay, etc., should be definitely fixed before accepting a post. *E. M. Oddie.*

Award to Pyrus Malus, Russell's Weeper.—(*Gard. Chron.* April 21.)—Pyrus Malus Exzellenz, Thiel (not P. M. Excellency, Thiel) was introduced by Louis Spath in 1909, and was a chance seedling of a weeping form of Pyrus prunifolia. The buds are red and the expanded flowers soft pink. The buds and flowers of Russell's Weeper are white, and the flowers smaller and star-shaped. Another weeping Pyrus shown at the same time by Mr. Russell was nearer P. M. Exzellenz Thiel. This did not receive an award. The Award to P. M. Russell's Weeper is fully justified. *William Lawrence, Burford.*

The late Frank Reader.—In one's life there are always certain men, who, by the strength of their character, make a permanent impression. Frank Reader, with whom I was closely associated for four years, was one of these. Trained by the Rev. W. Wilks, Rector of Shirley, and Secretary of the Royal Horticultural Society, he learned his lessons well and became a tower of strength in the Society. In the dark days of South Kensington he was an optimist, and the cumulative justification of this optimism was the crown of his life's endeavour. Simple but shrewd, he had the keenest sense of values, and we, who from time to time were responsible for the conduct of affairs, asked his advice and took it. There was never a kinder office head, and never a man less tolerant of lip service. During nearly forty years of service his remuneration had been modest, yet he was always content, and when on his retirement the Council and his other friends tried to show their appreciation of his work, he was overwhelmed by the gifts which he regarded as very large indeed. In those last days at the hospital of St. John and St. Elizabeth I often saw him, and he could only speak of the kindness of the surgeons, sisters and his friends. He never complained. The Society has lost a good and faithful servant. In Shirley churchyard the master and the disciple lie side by side. *William Lawrence, Burford.*

Plants of Botanical Interest.—In recent years many plants have been shown at the fortnightly meetings of the R.H.S., and passed over by the Committees as not worthy of recognition. Is it not possible that some form of award could be given to record their introduction to the public, especially to those who are interested in botanical novelties? Many times one sees interesting subjects shown, and yet no official notice is taken of them, or mention made in the gardening press. The R.H.S. especially asks for plants of interest to be shown by their members, but unless they are of the standard necessary for an Award of Merit, little notice is taken of them. May I suggest that a Botanical Certificate be instituted, and the subjects placed on a table set aside for that purpose, calling attention to them as "Plants of Botanical Interest." There are many who would welcome some such idea, and it would encourage those who go to the trouble to bring them along if some slight appreciation was shown for their keenness and love for the less showy subjects of the vegetable world. *C. F. W.*

Gooseberry Sawfly.—The caterpillars of this pest are now making their appearance, and an examination of the host will reveal their presence. The leaves near the centres of the bushes, and generally near the ground, will be found to have small holes in them, and upon looking beneath them colonies of caterpillars may be discovered. If the number of bushes is small, hand-picking should be sufficient control, but on a larger scale spraying with a good insecticide may be necessary. *Somerset.*

VEGETABLE GARDEN.

SALSIFY AND SCORZONERA.

Salsify (Tragopogon porrifolius) is a hardy biennial, cultivated for the use of its white, fleshy roots, which may be cooked and served in several ways. Seeds should be sown during the first half of April, in drills fifteen inches apart, the seedlings being subsequently thinned to nine or twelve inches apart. This vegetable requires a rich and well-cultivated soil, and is an excellent crop to follow Celery; the roots should be lifted in autumn and stored in sand, or, in favourable districts, they may be lifted as required for use. The young flower stems may be gathered in spring and used like Asparagus. Salsify is a valuable vegetable, and its value is best realised in a hard winter.

Scorzonera hispanica was, at one time, valued as an antidote for snake bites, hence the generic name, from the old French *scorzon*, or *scurzon*, a serpent, and the common name, Viper's Grass.

Its cultural requirements closely resemble those of Salsify, except that the requisite period of growth is shorter; the seeds should be sown in early May, and the roots will be ready for lifting in September or early October; these roots may remain in the ground until required for use. S. hispanica was introduced from South Europe so long ago as 1576, and it is a matter for surprise that this really useful vegetable is not more generally cultivated.

THE CHINESE ARTICHOKE.

Stachys tuberifera, or more correctly, Stachys Sieboldii, is scarcely known outside the garden of vegetable connossieurs, and yet such an excellent and easily-grown vegetable may well lend variety to the produce of many gardens, both large and small. The quaint tubers are boiled for about fifteen minutes and served with sauces; in addition, they may be fried, employed in the salad bowl, or used in mixed pickles. Their small size and peculiar form are properties that do not, I suspect, appeal to the presiding genius of the kitchen, but on the continent the Chinese Artichoke is esteemed highly.

A sandy soil, manured during the previous season, and a warm sunny position, will meet the requirements of this vegetable; the tubers should be planted in April, two to three inches deep and about eight inches apart, with fifteen inches between the rows. The crop should be lifted in autumn and stored in sand, although, in warm districts, I have known the tubers to be left in the ground and lifted as required for use. The Chinese Artichoke is very prolific and spreads with rapidity into considerable masses. *Ralph E. Arnold.*

BASIL.

This intensely aromatic herb, known to the French as *Herbe royale*, is generally employed in domestic circles for cooking and flavouring purposes, and its agreeable flavour and perfume recommend it as a kitchen-garden plant. Active medicinal properties are also claimed for it, and it is said to have been used with success in medicine for mild, nervous disorders, while in South America the fresh juice of the plant is used as a vermifuge.

The plant, Ocimum Basilicum, is quick-growing, and succeeds best in a light, rich soil, and a few plants suffice to ensure a supply of its aromatic, green leaves during the whole summer. An annual, and a native of the warmer parts of India, it should be raised in heat in spring, and planted out so soon as weather conditions allow. By August, the flowers borne in whorled, leafy clusters so common to the Labiates, should appear and the stems may be cut and dried in the shade for winter use, after which the plants may still develop healthy lateral growths, furnishing a supply of green leaves until frost destroys them.

There are several varieties, including a Lettuce-leaved one, with broad, undulating, crimped leaves; and a very distinct form with curled leaves. If green supplies are required during the winter season, a few plants may be grown easily in small pots for this purpose. *A. N. R. S.*

SOCIETIES.

GHENT QUINQUENNIAL EXHIBITION.

(*Concluded from p.* 300.)

Their formal visit on the occasion of the opening of the Floralies Gantoises did not entirely satisfy certain members of the Belgian Royal family; indeed, on April 21 they had little opportunity of obtaining more than a general view of the great exhibition and chatting to the principal people connected with the home and foreign sections. It was not surprising therefore that Her Majesty the Queen of the Belgians had a private view on Tuesday, April 24, when she arrived at 10.15 p.m., and remained until midnight. A busy late-staying attendant in the British Section arose to the occasion and made up a fine basket of fruit from Messrs. Monro's stall for presentation to Her Majesty. On Wednesday, April 25, Prince Charles and Princess Marie José paid a private visit late in the evening, but on this occasion the visit was anticipated, and a basket of Roses and Carnations was arranged in the British Section and left for Her Royal Highness's acceptance. Another royal visitor who enjoyed a late private view was Princess Marthe of Sweden.

Azaleas.

Readers will have gathered already some idea of the extent of the display of Azaleas in the main building, but no description can convey the brilliant spectacle these plants provided, as viewed from the balcony of the British Section. Just below there were three large and striking displays; the central one consisted of about sixty perfect plants of Azalea Apollo, each about a yard wide, and smothered with scarlet flowers. These were from M. Theodore Piens, of Melle, to whom a R.H.S. Gold Medal and many other prizes were awarded. M. Piens also exhibited a large group of smaller plants of the varieties Niobe, semi-double, white; Pharailde Mathilde, Paul Schâm, rich salmon-pink; and other better-known sorts.

The two other groups referred to were huge, flat, star-like arrangements of small, freely-flowered plants of Azaleas, the centre and rays composed of distinct colours; as each bed was about twenty-five feet in diameter they constituted a distinct feature; the exhibitors were Messrs. Sanders, of St. Albans and Bruges.

The Azaleas grouped on and around a raised, circular platform in the centre of the main building were one of the finest features of the show. The plants were of large size—three feet to four feet high and nearly as wide—splendidly flowered and in perfect condition. Each specimen was in a tub. This big group, contributed by Mr. G. Vermaerke de Meyer, of Gentbrugge, was one of the finest we have seen, and on dozens of the big plants it would have been a tedious and difficult business to discover a space in which to insert a lead-pencil between the flowers. A few of the outstanding varieties were Ernst Eeckhaute, John T. Llewelyn, Julius Roehrs, Madame J. Haerens, Professor Wolters, Madame van der Cruyssens, Haarensiana, Imperatrice d'Indees, Simon Mardner, Haarensiana rubra and Rosea. This grand display secured one of the principal awards and also the Gold Medal of the Royal Horticultural Society.

An extensive exhibitor of varieties of Azalea indica was Mrs. J. P. Hartman—a name to be seen attached to exhibits in almost every part of the show, from the superb pyramid, columnar and standard Bay trees at the main entrance, to Palms, Araucarias, Mollis Azaleas, Camellias, etc. In every instance the plants were well-grown and well arranged. Mr. Hartman was certainly one of the largest individual exhibitors at Ghent. Apollo, Temperance, Hexe, John T Llewelyn, Othello, Professor Wolters, Albert-Elizabeth, Madame J. Vervaene and Cousina majestica were a few particularly fine Azaleas shown by Mr. Hartman.

The cerise-margined Azalea Albert-Elizabeth, which was considered to be the best new commercial plant exhibited five years ago, was well shown on this occasion by Mr. George Wibier, Mont St. Amand.

The **Flandria Company**, Bruges, also very extensive exhibitors, contributed great groups of Indian Azaleas; but we were particularly interested in their group of Kurume and amoena varieties, and wished this display could have had a better position, with the individual plants more obviously labelled. A few fine things were Azalea amoena Hexe, A. a. alba Eeckhautei, A. balsaminæflora covered with semi-double, salmon-coloured flowers, and the Kurume varieties Dionysius, pale cream; Azuma-Kagami, soft pink; Kurai-No-Himo, salmon; and Hinomanyo, light, clear pink.

M. **Aug. de Schryner de Bock**, Oostacker, showed a fine set of fifty plants of Azalea Julius Roehrs. Vainquer, salmon-rose, and Regius, single scarlet, were two good new Azaleas from Mr. A. **Steigaert**, Landebrugge.

The examples of quaintly-trained examples of Azalea amoena Hexe, shown by M. **Adolphe van Hecke**, Saffelaere, attracted a great deal of attention, as they were trained into the various shapes met with in topiary, and covered with brilliant blooms. M. L. **Delaruye**, Ledeberg, and M. F. **de Lovre**, Mont St. Amand, each contributed large displays of superbly-flowered varieties of Azalea indica, while other exhibitors of fine Azaleas in variety were MM. **Manhout Frères**, of Mont St. Amand; M. **Louis Van Houtte, Frères**, La Pinte, and MM. **Adriaenssens Frères**, Loochristy.

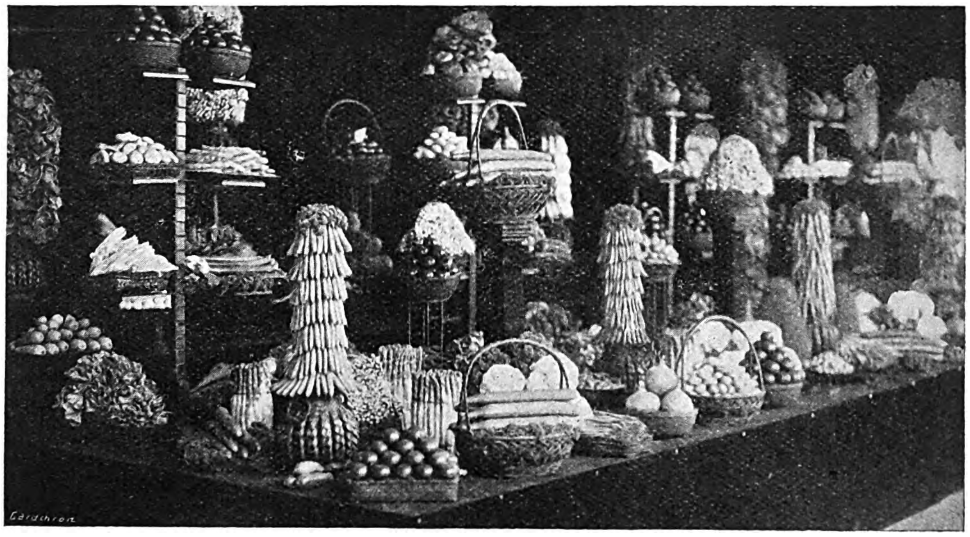


FIG. 154.—GHENT QUINQUENNIAL EXHIBITION: MESSRS. SUTTON AND SONS' GROUP OF VEGETABLES IN THE BRITISH SECTION.
(see p. 298).

Foliage Plants.

In the *serre chaude*—the Hall of the Blue Lagoon (Fig. 146)—the outstanding display, other than the Orchids, was the wonderful and extensive exhibit of foliage plants arranged at the waterfall end by M. **Van Houtte, Frères**, La Pinte. Although the Belgian growers have not yet quite attained the brilliant colouring and massive proportions that characterised their displays before the war, they have, nevertheless, made an amazing recovery, as instanced by the grand collection—it would almost have filled the R.H.S. Hall—from La Pinte. It included huge Codiaeums, Alocasia Thibaudiana, Dracaena Godseffiana, Anthurium cristallinum and its variegated form, Bilbergia Forgetiana, Schizmatoglottis Roebelini, Philodendron Corsinianum, Dieffenbachia Regina, D. imperialis nobilis, Fourcroya Lindeni, Pandanus graminifolius, Maranta insignis, Nepenthes Sir. W. Thiselton-Dyer, Heliconia Edwardus Rex, Carludovica humilis, and the spreading Cibotium Schiedei, with towering Kentias, Phoenix, Latanias and other Palms in the background. A very special championship award was made to this collection.

Scarcely less effective, but lacking the fine position of the former, were the grand groups of Palms and other fine foliage plants, contributed respectively by the **Flandria Company** and M. **Francois Spae**, the latter showing a very fine series of the rarer varieties of Palms. These two fine exhibits supported the **Van Houtte** display and flanked the Blue Lagoon.

The Monte Carlo authorities displayed fine groups of Platyceriums, including several big examples of P. grande, all arranged on tree stems; they also showed big groups of large Pandanus, large Cycads and Asplenium Nidus all on a groundwork of clean sand.

M. **Alexis Dalliere** contributed fine foliage plants in fine style and the names attached reminded us of the old-time catalogues of the days of Veitch, Bull and Henderson. M. **Vincke**, Scheepsdale; M. A. **le Clerq**, M. **Jules Janssens** (Rex Begonias), and M. J. **Story** (Palms), all exhibited finely in this section.

A big plant of Encephalartos horridus came from Monte Carlo, as did a large Polypodium phymatodes and Encephalortos Laurentii; and a giant Encephalartos Altensteinii from M. **Spae**, who also showed a big example of Angiopteris fraxinifolia.

Madame A. **Loicy Zwaenhoek**, Chateau de Zwaenhoek, Melle, sent a large group of fruiting plants of several varieties of Pineapples.

M. **Franz de Laet**, Contich, filled a large corner space with Cacti and other succulents (Fig. 153), and by means of rockwork and a painted background contrived to create a large and effective Mexican scene. Opuntias, Cereus giganteus, Pilocereus senilis, Euphorbia obesa, the pebble-like Mesembryanthemums, Echinocactus Grussoni (very fine specimens), Trichocaulons, Gasterias, and many other quaint and interesting plants were to be found in this exhibit, which was the finest of its kind we have ever seen.

The large examples of Medinilla magnifica from the **King of the Belgians'** gardens, at Laeken, standing on the margin of the water, were greatly admired, as were the handsome groups of Anthuriums, Hippeastrums and Clivias from well-known Belgian nurserymen, such as M. **Verdonck**, Messrs. **Sanders**, M. L. **Van Houtte**, and M. **Delaruye-Cardon**.

Dutch Section.

The Dutch section filled the position occupied by the British Section five years ago. The various growers contributed splendid spikes of Lilacs and beautiful Roses, all arranged in huge vases in imposing fashion (Fig. 155); these, like so many of the exhibits, came from the famous flower-growing town of Aalsmeer. Tulips were scarcely less abundant, and they were chiefly Darwin varieties, but they were not disposed so pleasingly as the Lilacs and Roses; indeed, there was too much bare ground space in many parts of this section; many more flowers and plants could have been shown without any suggestion of crowding.

Mr. C. **Van Tubergen** filled a large space with a multitude of choice bulbs, border, alpine and moisture-loving plants, but the plantings of the hardy subjects were very sparse. Coloured Freesias, Haemanthuses, Ismene Amancaes, I. festalis and Sprekelias were all delightful, while Incarvillea grandiflora, I. Delavayi, Rehmannia angulata, Erythronium revolutum, Fritillarias, Saxifragas, Sedums, Cypripedium Calceolus, Orchises, Tropaeolum tricolor on a Cupressus, Astilbes, Leucojums, varieties of Primula Sieboldi, Anemone Blue Ray (nemorosa var.), Arum sanctum, Tulip species and Corydalis bellidifolia, were all well represented in a very fine collection.

M. **Baardse**, of Aalsmeer, sent very fine Cyclamens and Hydrangeas; Mr. J. **Bier** showed the graceful Adiantum Roem van Moordrecht, of A. Farleyense type; Messrs. **Koster and Son**, Boskoop, contributed masses of glowing Rhododendrons and Azaleas, including Rhododendron Peter Koster, soft salmon-pink, and R. Hugh Wormald, scarlet, pink and white.

Rose Gloria Mundi, a Polyantha variety with flowers of good size, was the outstanding new plant in this section; it was exhibited by Messrs. **Sliedrecht and** Co., Boskoop, and is of bright rich Geranium scarlet colour; we understand this Rose is a sport from a sport from Orleans.

Messrs. C. B. **Van Ness and Sons** showed fine Rhododendrons in fine style, these including the varieties J. H. Van Ness, Britannia, Mrs. Harold Tery, Horsham, Dr. W. F. Wery, Hon. Mrs. Joyce Montague, Pink Beauty and Van Ness's Glory. Hippeastrums in quantity, from Messrs. **Den Older**, Leiden, represented a fine strain of richly-coloured varieties.

French Section.

The background of the French Section was a blue pergola, and a painted scene of the Cote d'Azur, flanked by such subjects as are familiar in Riviera gardens, namely, Oranges, Citrons, Eucalyptus, Acacias, Myrtles, Agaves, Palms and Tree Ferns. On one side of the French Section, Messrs. **Vilmorin Andrieux et Cie.**, Paris (Fig. 147), had a very attractive exhibit of capital selections of Cinerarias, Primula obconica Stocks, in various colours, and other plants readily raised from seeds; it was one of the most graceful and attractive exhibits we have ever seen from the well-known Paris seedsmen.

Great beds of the large-flowered perpetual-flowering French Carnations were displayed in the centre of the section, with a fine collection of varieties of Anthurium Andreanum, Bougainvillea glabra, Asplenium Nidus, Agaves, etc., from the gardens of the **Bains de Mer de Monaco**.

M. **Becks** was a large exhibitor of Hydrangeas, and so was M. **Travouillon-Buret**, of Tours, who included groups of a new, light pink, variety named Madame Faustin-Travouillon.

M. **Leonard Lille**, Lyon, exhibited many Roses, including Baby Fourax, a semi-double, violet-coloured sport from Mrs. W. Cutbush interesting but not beautiful; another new sort was named President Duhem, and this has large, red flowers.

The floral designs from M. **Charlot**, of Paris, were gorgeous, but, excepting the superb vase of big Carnations, they were not quite in accord with British tastes.

Entertainments.

Our Belgian friends maintained their reputation for unstinted hospitality. The judges were entertained to lunch on April 20, and to a sumptuous banquet during the evening of April 21. On April 20, Mr. and Mrs. George Monro royally entertained to dinner the members of the British Section and their wives, the British exhibitors, the R.H.S. deputation, the Comte and Comtesse de Kerchove, and other officials of the Ghent Society, M. Baels—the Minister of Agriculture, M. Orshoven, M. C. Pynaert, and members of the British and Belgian horticultural press, at the Hotel de la Poste; about 130 persons were present. After the dinner there was a special gala performance at the theatre for the judges and officials. On April 22, a trip was arranged to Antwerp, and in the evening there was another dinner, given by the Belgian horticulturists. Visits to the chief places of interest in Ghent were also arranged and the Comte de Kerchove entertained the leading members of the various sections and, with the Comtesse, gave a grand ball as a fitting and brilliant conclusion to a brilliantly successful show, and a fine round of entertainments.

Our illustrations of the Ghent Exhibition are reproduced from photographs by M. Geo. Pieters, Rue Courte du Jour, Ghent.

MIDLAND DAFFODIL.

April 25 and 26.—Owing to the very severe frosts and long continued cold, biting, east winds, the two days' annual show, held at the Edgbaston Botanical Gardens, was much smaller than in many previous years, but the displays of miscellaneous flowers, including Tulips, Primulas, Polyanthuses, hardy plants, Cacti and floral decorations, made a welcome addition and helped to compensate for the slight falling off in the Daffodil exhibits. The Midland Daffodil Society is fortunate in possessing an abundance of Challenge Cups, Vases and Plate, as well as being able to offer substantial cash prizes as an inducement to amateurs and professional growers who, in normal times, support the Society splendidly. All the leading raisers of Daffodils are generally to be seen at Birmingham, and the Society's April gatherings are noted for the great variety of high quality seedlings. On the present occasion several prominent raisers could not attend, but there were many flowers of exceptional merit, including such as Suda, Carmel, Countess of Antrim, Lady Lilford, Marmora, Eskimo, Crucible, Seashell and Mary Malony.

The President, the Rev. T. Buncombe, presided over the annual general meeting, held in the garden Library on the first day of the show, and after complimentary references to the subscription list and the society's strong financial position, the Rev. T. Buncombe and Mr. Herbert Smith were re-elected President and Hon. Secretary respectively, with Mr. W. F. Mitchell as Hon. Treasurer in place of Mr. G. B. Cope. The dates of next year's show were fixed, provisionally, for April 17 and 18.

The Floral Committee recommended Awards of Merit to eight varieties, which are briefly described hereunder, and reference is also made to some of the most noteworthy flowers shown in the competitive classes, in which the principal prizes were won by the Irish growers.

AWARDS OF MERIT.

Narcissus Crucible.—A charming Barrii variety with a pure white, shapely perianth and a rich, orange-yellow cup or crown. Shown by Mr. J. S. Arkwright, Presteign.

Narcissus Seashell.—A Leedsii variety with a broad, white perianth and a pale yellow cup, deepening in colour as it approaches the frilled edge.

Narcissus Brimstone.—A beautiful variety with a canary-yellow perianth and slightly deeper-coloured trumpet. The above two varieties were shown by Mr. W. B. Cranfield, Enfield.

Narcissus Carmel.—A splendid flower with a broad, flat perianth, and pale, sulphur-yellow trumpet.

Narcissus Lord Antrim.—The flowers of this variety are remarkable for the intense golden-yellow perianth and bold, substantial, frilled trumpet.

Narcissus Copper Bowl.—(See *Gard. Chron.*, April 21, 1928, p. 287).—These three varieties were shown by Mr. Guy L. Wilson, of Broughshane.

Narcissus Suda.—This is a Giant Leedsii with a delicate white perianth and a shapely, frilled Cup suffused throughout with very pale shell-pink.

Narcissus Warspite.—A charming Incomparabilis variety with a broad, flat, white perianth and a rich, orange-coloured cup or crown. The two last varieties were shown by The Donard Nursery Co., Newcastle, Co. Down.

OPEN CLASSES.

The principal class was for a collection of thirty-six varieties of Daffodils representing the different divisions. Three stems of each variety were required. The Donard Nursery Co. and Mr. J. S. Arkwright were the only contestants, but each exhibitor had flowers of great merit. The first prize was won by the Irish firm, whose best flowers were Suda, White Dame, Seashell, Market Glory, Miss Clinch, Lady Lilford, Eskimo, Lady Moore, Ettrick, Herod, Festive, White Wax, Helmet and White Knight. Mr. Arkwright's leading specimens included Red Guard, White Conqueror, Corregio, Rob, Honesty, Osprey, White Queen of Spain, Silver Salver, Buttercup and a number of unnamed seedlings. The class for twelve varieties of three stems each, of yellow, white or bicolor Trumpets was remarkable for wonderfully clean, bright and shapely blooms. First, Mr. Guy L. Wilson, who included Jack Spratt, Honey Boy, Beersheba, King of the North and Countess of Antrim; second, the Donard Nursery Co., with excellent specimens of Herod, Brimstone, Cleopatra, White Wax and White Knight.

The best half-a-dozen yellow Trumpet varieties also came from Mr. Guy L. Wilson, who showed Bulwark, Golden Flag and unnamed seedlings in first-class condition; second, the Donard Nursery Co., who had exquisite specimens of Brimstone, Herbert Smith, S6 and Cleopatra. Mr. Wilson again led in the class for six white Trumpet varieties with Eskimo, White Forest, Kantara, B1923, Beersheba and 14/28. In the Donard Nursery Co.'s second prize stand we were impressed with White Knight, White Dame and Eskimo.

The same two exhibitors were placed as named in the next class, which was for six bicolor Trumpet varieties. Mr. Wilson showed extraordinarily good specimens of Honour, Jack Spratt, Moira O'Niell and three seedlings. The Donard Nursery Co.'s best flowers were S19, Cranfield and 3/23. The winning exhibit of six yellow Incomparabilis Daffodils also came from Mr. Wilson, who had extra large flowers of Faithful, Flava, Pilgrimage and Bokhara. The Donard Nursery Co. came second, but were placed first in a similar class for six white Incomparabilis varieties, with beautiful flowers of Moschata, Whitewell, Festive and Lady Mary Boscawen; second, Mr. W. A. Watts, St. Asaph, with delightfully fresh blooms of Idris, Curtain, Curlew and Tingle.

The best exhibit of six white Barrii varieties was staged by the Donard Nursery Co., who had shapely flowers of Queen of Hearts, Firetail, Gules, Harpagon, Lady Moore and Lady Lilford; second, the Rev. R. Buncombe, Black Torrington, Devon.

Mr. Wilson excelled in the class for six large-crowned Leedsii varieties with delightful blooms of Mitylene, Marmora, Ettrick, B108/18, Suda and Hymettus; second, the Donard Nursery Co., whose best flowers were White Lady, Blizzard, Mitylene and Helmet. The Donard Nursery Co. were the only exhibitors in classes for (1), six small-crowned Leedsii varieties, and (2), six Triandrus hybrids. The latest Leedsii varieties were St. Olaf and Silver Plane, while Venetia, Christine and White Coral were the pick of the Triandrus hybrids.

The Donard Nursery Co. also won the first prize in the class for Poeticus varieties with wonderfully fine flowers of Socrates, Opera, Snow King, John Masefield, Ring Dove and Ace of Diamonds; second, Rev. T. Buncombe, whose flowers of Snow King, Socrates and Dulcimer were of outstanding merit.

SINGLE BLOOM CLASSES.

Yellow Trumpet Variety.—First, Mr. W. B. Cranfield, with Brimstone, a beautiful flower of intense colouring; second, Mr. Wilson, with Lord Antrim.

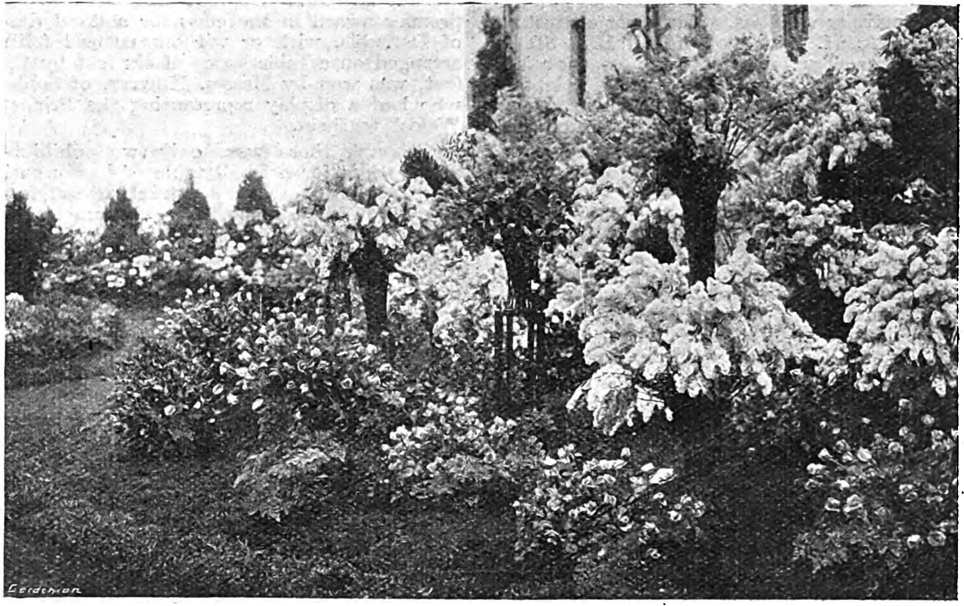


FIG. 155.—GHENT QUINQUENNIAL EXHIBITION: LILACS AND ROSES IN THE DUTCH SECTION. (see page 322).

White Trumpet.—First, Mr. Wilson, with a perfect specimen of Beersheba; second, the Donard Nursery Co., with White Dame.

Bicolor Trumpet.—First, Mr. Wilson, with 17/37; second, the Donard Nursery Co., with Lady Primrose.

Yellow Incomparabilis.—First, Mr. John Priest, with a magnificent specimen of Pilgrimage; second, Mr. W. A. Watts, with B67, a very promising variety.

Bicolor Incomparabilis.—First, the Donard Nursery Co., with Festive; second, Mr. W. A. Watts, with Jingle.

Yellow Barrii.—First, Mr. Herbert Smith, with an unnamed seedling; second, Mr. W. A. Watts, with S203.

White Barrii.—First, Mr. John Priest, with Mowgli, a handsome flower of great purity; second, the Donard Nursery Co., with Firetail.

Large-crowned Leedsii.—First, the Donard Nursery Co., with Suda; second, Mr. W. B. Cranfield, with Seashell.

Small-crowned Leedsii.—First, the Donard Nursery Co., with a refined flower of Samaria.

Triandrus Hybrid.—First, the Donard Nursery Co., with Christine; second, Mr. W. B. Cranfield, with Venetia.

Jonquilla Hybrid.—First, Mr. W. B. Cranfield, with Golden Bowl, a delightful flower; second, the Donard Nursery Co., with Buttercup.

Tazetta or Tazetta Hybrid.—First, the Donard Nursery Co., with Jaune à Merveille; second, Mr. W. A. Watts, with Elvira.

True Poeticus.—First, the Donard Nursery Co., with an exquisite flower of Opera; second, Mr. W. A. Watts, with Dulcimer.

Doubles.—Mr. Herbert Smith had the best double-flowered variety with Inglescombe; second, the Donard Nursery Co., with S20.

Seedlings and New Varieties.

The blue ribband of the Midland Daffodil Society is the Bourne Challenge Cup, which perpetuates the name of a gentleman very closely identified with the early life of the Society. The Cup, which is offered for twelve varieties, one stem of each, raised by the exhibitor, was again won by Mr. Guy L. Wilson, who had a splendid set of flowers of Flava, Queen of Ulster, Faithful, May Malony and unnamed seedlings; second, Mr. J. S. Arkwright, whose choice flowers were all under numbers; third, Mr. W. A. Watts.

The best of two exhibits of six varieties raised by the exhibitor came from Sir Charles Cave, Bart., Sidmouth, who had some remarkably promising varieties. The other contestant was Mr. A. H. Bassano, of Old Hill, Staffs. In a smaller class for three varieties, also raised by the exhibitor, Mr. G. B. Cope, Albrighton, took the lead with a set of particularly good quality flowers; second, the Rev. T. Buncombe; third, Miss Pope, King's Norton.

The Cartwright Challenge Cup was offered for twelve varieties, one stem of each. Last year's winners, the Donard Nursery Co., were again to the fore with a grand lot of flowers of Suda, Seashell, White Knight, Warspite, Lady Milford, Eucharis, Festive, Water Lily, Giant Incomparabilis No. 2, Blizzard, Firetail, and one unnamed; second, Mr. W. A. Watts, whose specimens of Cheerfulness, Dulcimer, John Masefield, Idris and Curlew were of outstanding merit.

Mr. Herbert Smith was the only exhibitor in a class for six varieties. He had Ettrick, Lord Roberts and Rosemorran Giant, in splendid condition.

The Walter Ware Challenge Cup, offered for six Triandrus seedlings, one stem of each, was won by Mr. W. A. Watts, whose flowers of high quality were all under numbers; Mr. W. B. Cranfield was second, and the Donard Nursery Co., third.

The White Daffodil Trophy was offered for six varieties of White Trumpet Daffodils, one stem of each. First, the Donard Nursery Co., with beautifully fresh specimens of White Wax, Kotick, White Dame, White Knight, Sybil Foster and Eskimo; second, Mr. Guy L. Wilson (last year's winner), who showed Katrina, Beersheba and unnamed seedlings in splendid condition.

The Leamington Challenge Cup was for six varieties with red cups, one stem of each. Mr. W. A. Watts repeated last year's success. His blooms of Juniper, B61, B71, Vixen and Jingle were greatly admired; second, Messrs. Barr and Sons, Covent Garden, who had splendid flowers of Abeliarde, Alcida and No. 20; third, the Donard Nursery Co.

The Arkwright Challenge Cup, offered for six bicolor Trumpet varieties, was won by Mr. Guy L. Wilson, with shapely blooms of Jack Spratt, Tapin, Queen of Ulster, 13/40 and 16/101; second, the Donard Nursery Co., whose best flowers were Carmel and Rosemorran Giant; third, Rev. T. Buncombe.

The Williams Challenge Cup, offered for six varieties of Yellow shades, but without red colouring in the cup, was awarded to the Donard Nursery Co., for uncommonly good flowers of Bulwark, Monarch, Leontes, Brimstone, Cleopatra and S9; second, Mr. Guy L. Wilson, who had lovely specimens of Faithful, Bulwark and 6/5; third, Miss Pope, King's Norton.

The Dr. Lower Challenge Cup, offered for the first time, was for six yellow Trumpet varieties, one stem of each, raised by the exhibitor, and it was awarded to Mr. Guy L. Wilson, who had a walk-over. He showed Sorley Boy and five unnamed varieties.

Amateur Classes.

The biggest class in this section was for twenty-four varieties of Daffodils, with the same conditions as in Class 1. Mr. H. R. Darlington, Potter's Bar, was the only exhibitor, and he was deservedly awarded first prize, as his flowers of Cossack, White Lady, Diana, Will Scarlet, Pedestal, Weardale Perfection, Glory of Leiden, Cygnet and Mrs. E. H. Krelage were surprisingly good.

Mr. A. H. Bassano, won first prizes for (1) six Trumpet Daffodils; (2) six Incomparabilis varieties; (3) six Barrii varieties; (4) six Leedsii varieties; and (5) six Poeticus varieties. Mr. H. R. Darlington was second in each of the above classes, and first for three Tazetta varieties. Mr. Bassano also secured the special prize offered by Messrs. Cartwright and Goodwin for six varieties of Daffodils; Mr. Herbert Smith being second.

Miscellaneous Open Classes.

The first prize for a bowl of cut Daffodils was won by Miss Pope, Miss Buncombe being second, and Mrs. Herbert Smith third. The premier award in the class for a floral design of Daffodils, with or without natural foliage, arranged on a table space of six feet by three feet, was won by Messrs. Hewitt, of Solihull, who had a display representing the Prince of Wales' feathers.

Although there were only two exhibits in a new class for a small table of hardy spring flowers, they were very attractive and found many admirers among the general public; first, Miss Buncombe, who used Snowy Mespilus, Pyrus, Berberis, Anemones, Epimediums, Fritillarias, Violas, etc., with good effect; second, Miss Pope, who relied upon the blue Grape Hyacinth and the Warminster Broom (Cytisus praecox) lightly arranged in rustic stands.

Medal Awards.

The Birmingham Botanical and Horticultural Society's Medals were awarded as follow:—Class 1 to 29, Silver Medal to the Donard Nursery Co., with 167 points; Bronze Medal to Mr. Guy L. Wilson, with 75 points. Classes 15 to 29, and 30 to 42: Silver Medal to the Donard Nursery Co., with 94 points; Bronze Medal to Mr. Guy L. Wilson, with 61 points. Classes 15 to 29, and 44 to 57: Silver Medal to Mr. A. H. Bassano, with 55 points; Bronze Medal to the Donard Nursery Co. with 42 points.

Honorary Exhibits.

Messrs. Barr and Sons had a magnificent collection of Daffodils in which the under-mentioned varieties were of superior merit, viz., Croesus, Fantin Latour, Tenedos, Beersheba, Alcida, Mrs. Francis King, Drake, Firetail and Ashguard (Gold Medal).

Messrs. Hewitts' had a splendid show of Floral Designs, including artistically arranged bouquets of Roses, and bold vases of Spanish Irises, Darwin Tulips, Liliums and a number of miniature Japanese gardens (Gold Medal).

Mr. Guy L. Wilson was represented by a collection of choice varieties of Daffodils, which included Kintara and White Conqueror of the White Trumpet varieties; Goldbeater and Bulwark of the yellow Trumpets, and Carmel, a splendid bicolor Trumpet; Marmora, White Nile and Tenedos, of the Leedsii varieties; Torrid, a beautiful Incomparabilis; Galata, a Barrii, and a big lot of unnamed seedlings. (Silver-gilt Medal).

Mr. W. Leslie Carter, Langley Green, Staffs., a new exhibitor, sent an interesting collection of uncommon Primulas, together with Saxifrages and Polyanthuses. (Large Silver Medal.)

Mr. W. A. Watts had a large group of clean, Daffodils of good quality, well-set-up, which included Lighthouse, Dulcimer, Red Guard, Cassandra, Idris, Vixen, Jingle, Owen, Market Glory, Snowdon, Will Scarlet and unnamed seedlings. (Large Silver Medal.)

Mr. G. W. Miller contributed a fine bank of Tulips, Daffodils, Polyanthuses and other hardy flowers. (Large Silver Medal.)

Messrs. Cartwright and Goodwin staged a fresh lot of Daffodils, mostly of the small-flowered varieties. (Silver Medal.)

Mr. H. G. Longford had a display of Daffodils, Tulips and an excellent strain of strong-stemmed, large-flowered Polyanthus. (Silver Medal.)

Miss S. S. Thompson, Handsworth, sent a small and interesting collection of Cacti.

RHODODENDRON ASSOCIATION.

May 1 and 2.—On July 5, of last year, the Rhododendron Society became the Rhododendron Association, so that the first show of the latter body is the third competitive Rhododendron show that has been held in the Horticultural Hall, at Vincent Square, Westminster. This most recent show was a decided improvement on its predecessors and, but for a few vacant spaces on a couple of tables, the view from the gallery was very pleasing. The large trade groups of plants arranged on the floor, and the amateur groups on the tabling along the wall space made very effective displays. Although, no doubt due to the vagaries of our climate, a few classes were poorly contested, the competition generally was very good indeed, and many admirable exhibits were displayed. Section B of the R.H.S. Floral Committee met in the morning and recommended four Awards of Merit to new Rhododendrons. On this occasion other shrubs were not admitted.

Floral Committee.

Present: Mr. Gerald W. E. Loder (in the chair), Mr. Amos Perry, Mr. G. Reuthe, Mr. F. G. Preston, Mr. Eric M. Marsden-Jones, Mr. Reginald Cory, Mr. J. J. Crosfield, Mr. A. Bedford, Hon. Henry D. McLaren, Mr. W. J. Bean, Mr. C. Williams, Mr. R. W. Wallace, Mr. L. R. Russell, Mr. E. H. Wilding and Mr. N. K. Gould (Secretary).

Awards of Merit.

Rhododendron keleticum.—This very pretty little species was discovered by Forrest on Salween-Kiu Chiang Divide, Tsarong, south-east Tibet, in 1919. A very healthy bush, about four inches in height, and bearing relatively large flowers, was shown. The dark green, shining, ovate, short-stemmed leaves are a trifle over half-an-inch long, and are dull cinnamon-coloured on the under surfaces. The flowers, which are saucer-shaped, measure an inch-and-a-half across, and are borne on pinkish stalks set with white tomentum. The calyces are pale green and the flowers are an attractive lilac-mauve, with a few crimson spots on the upper segments and flushed with purple on the outsides. Shown by Messrs. R. Gill and Son.

R. Linley Sambourne.—This is a magnificent hybrid. The large, compact trusses are made up of widely expanded flowers, freely flushed with rich pink on a white ground, and there is a rich carmine blotch at the base of the segments. The foliage is also good. Shown by Lt.-Col. C. R. Messell, Nymans, Handcross.

R. Mars.—A hardy hybrid of uncommon appearance. The medium-sized trusses are compact, and the "pips" have a clean-cut appearance. It was stated to have been raised from R. Corona and a hardy red hybrid. The colour is a rich, clear, ruby-red. Shown by Messrs. Waterer, Sons and Crisp.

Azalea Princess Juliana.—This beautiful deciduous Azalea was raised from mollis × sinensis. A sturdy, free-flowering bush was shown, and it bore large trusses of bright yellow flowers which have pale orange markings on upper segments. Shown by Messrs. R. and G. Cuthbert.

Groups of Rhododendrons.

The Challenge Cup offered for the best group in the four trade classes was again won by Messrs. R. Gill and Sons, with a magnificent group of Rhododendron plants in flower, which was also awarded the first prize in Class 1. This very imposing display contained well-flowered bushes, fully ten feet in height, of the lovely pink Mrs. Richard Gill, and the similar but deeper-coloured Richard Gill, on either side of a large, white bush in the centre. There were also smaller, but still quite large, specimens of R. Nuttallii, R. Tyermanii, R. gloriosa, R. A. C. Kenrick and R. W. Watson. The smaller-flowered sorts were well represented by a magnificent bush of R. yunnanense and smaller plants of R. Augustinii, R. glaucum and R. impeditum. Mr. G. Reuthe, who was second, had some good bushes, but the group lacked finish He showed several interesting R. campylocarpum varieties, notably roseum, superbum, Prince of Wales and Rosetta. Of the large hybrids, R. Mrs. Thistelton-Dyer, R. Alice and R. Cornish Cross were very effective. Apparently in this class, although no exhibitors' cards were apparent, were attractive groups arranged by Messrs. Hillier and Sons, and Messrs. J. Cheal and Sons. The former had well-flowered bushes of Unknown Warrior, Mrs. Edwin Hillier, Mary Templar, Loder's White and other good hybrids, while the latter set out good standards of Doncaster and Pink Pearl over Alice, Bagshot Ruby and many other showy varieties.

The best of the three groups of hardy Rhododendrons was arranged by Messrs. R. W. Wallace and Co., who had a bright and effective arrangement. Bright colour was provided by good plants of Doncaster, R. campylocarpum, several seedlings and the new Mars. There were also well-flowered bushes of Noreen Beemish and Emmeline Buckley, of bright pink colour; Mrs. Lindsay Smith, a large white; White Pearl, and Barbara Wallace. The second prize arrangement of Messrs. Waterer, Sons and Crisp was rather uneven, but their group contained many good specimens. There were shapely standards of Starfish, a beautiful pink variety, at the corners and along the centre were large bushes of R. fastuosum fl. pl., Mrs. A. Waterer, Bagshot Ruby and Mother of Pearl. Other varieties of merit were Mars, Alice, Smithii album, Monstrous, Mrs. E. C. Stirling, Cynthia and Pink Pearl. The third prize exhibit, of Mr. W. C. Slocock, was rather a collection of Rhododendrons in square tubs than a show group. It contained some good R. campylocarpum and R. Aucklandii seedlings.

There were only two groups of Azalea plants and the first prize was won by Messrs. R. and G. Cuthbert with excellent examples, mostly of mollis × sinensis varieties of glowing colours. The principal sorts of this hybrid were Spek's Brilliant, Dazzler, Golden Queen, Multatuli and Dr. Oosthock. Messrs. J. Cheal and Sons were second, and they had large bushes of A. viscosa varieties, such as Bouquet de Flore and Phoebe, A. ledifolia alba, some Mollis varieties and several pretty Japanese Azaleas.

Single Trusses.

The competition for the two Challenge Cups was exceptionally keen. The McLaren Cup, offered for the best truss of a species, was won by E. J. P. Magor, Esq., Lamellan, St. Tudy, Cornwall, with a good truss of R. tenosporum, and the Earl of Stair was second with the pretty R. haematodes. Fourteen trusses of hybrids were shown, and the best was a magnificent specimen of R. Loderi var. Pink Diamond shown by R. Barclay Fox, Esq., while Lady Loder, Leonardslee, Horsham, was a very good second with a handsome truss of R. Loderi var. King George.

There was only one entry in the class for one truss of blood-red R. arboreum, Lady Loder being awarded the first prize.

The Earl of Stair showed the best bloom of the Arboreum series, a lovely pure white form; while in this class the beautiful Sun of Austerlitz was also well shown. For one truss of the Barbatum series no first prize was given, but the second prize was secured by Lionel de Rothschild, Esq., with a good specimen of R. habrotrichum; while Dame Alice Godman, of Horsham, showed the best blooms in the Campanulatum group, with a fine truss of pale lilac flowers in exceptional condition. Other exhibits shown in this class included good trusses of the cream-coloured R. lanatum, and the lovely R. Wightii.

Mr. C. E. Heath showed the best example of R. Falconeri; Dame Alice Godman secured the first prize for the best truss of R. fictolacteum; and in the class for any of the Falconeri group, Lionel de Rothschild, Esq., was the only exhibitor with a good specimen of R. galactinum.

In the class for one truss of R. Aucklandii or R. Griffithianum, R. Barclay Fox, Esq., of Penjerrick, Falmouth, was placed first for a fine example of the former species; and for the best blooms of any of the Fortunei series, Lady Aberconway and the Hon. H. D. McLaren were successful with the dull, rose-red R. orbiculare; R. decorum and R. Mrs. Butler were also shown well in this class.

E. J. P. Magor, Esq., was the only exhibitor in the class for the Grande series; he showed a good truss of R. perigrinum; while for one truss of the Irroratum group, Mr. Magor was the winner of the first prize, with a good specimen of R. Morii; for the Lacteum series there were no entries.

For blooms of the Megacalyx sub-series, R. Barclay Fox, Esq., was the successful exhibitor, with a magnificent truss of the giant, cream and white-flowered R. Nuttallii, while R. Lindleyi was also well-shown in this section; for species of the Maddenii series, Lionel de Rothschild, Esq., was awarded first prize for a fine truss of the charming R. carneum, while other notable exhibits were the trusses of R. Leyi, and the lovely,cream-coloured R. burmanicum.

A. M. Williams, Esq., of Launceston, Cornwall, showed the best blooms in the class for the Haematodes sub-series, his specimen of R. haematodes being exceptionally good. In the class for Neriiflorum Rhododendrons, Mr. E. J. P. Magor was the successful exhibitor, with a good example of the type plant; another species represented here was R. sperabile. A. M. Williams, Esq., was the sole exhibitor of the Sanguineum sub-series; he showed two forms of R. dichroanthum, one with vivid orange-scarlet blooms, and the other with salmon-coloured ones.

Of the Taliense series, the best exhibit was that shown by the Earl of Stair, of the lovely white, slightly tinged with pink, R. adenogynum, but there were also some very fine blooms of R. taliense and R. Prattii shown in this section. For one truss of the Campylocarpum sub-series, Dame Alice Godman won the first prize with a good specimen of the type plant. J. J. Crosfield, of Romsey, Hampshire, was the first prize winner for blooms of the Thomsonii sub-series, all the exhibits in this class being of the typical R. Thomsonii.

For one spray of any deciduous species of the Azalea series, Lionel de Rothschild, Esq., received the first prize for a magnificent flowering branch of R. Kaempferi, while there were also good exhibits of the pink-flowered R. Vaseyi; the rich yellow R. pontica, and R. Schlippenbachii.

In the class for evergreen species of Azaleas, the best exhibit was that shown by Admiral Walker-Heneage-Vivian, of Clyne Castle, Swansea, of a wonderfully flowered spray of R. amoena; while the Kirishima Azalea, also R. yedoense var. poukhanense were also staged in fine condition.

C. E. Heath, Esq., won the first prize in the class for sprays of any of the Campylocarpum group, with a good specimen of R. glaucum, which was shown in this section in varying shades of pink; and Lionel de Rothschild, Esq., was placed first in the class for the Cephalanthum series with a well-flowered branch of the beautiful R. ledoides, whose rich pink blooms are not unlike those of the well-known Daphne Cneorum; R. Sargentianum was also well represented in this class.

The exhibits in the class for sprays of the Cinnabarinum series were more numerous, and the competition was keen. Lady Aberconway and the Hon. H. D. McLaren were awarded the first prize for a good spray of R. blandiaeflorum, other species that were represented being R. cinnabarinum, R. Roylei, and R. Keysii, which has quaint, narrow, tubular blooms.

Dame Alice Godman showed the best truss of blooms of the Edgeworthii series, a beautiful R. Edgeworthii hybrid, and in this section there was also a good example of R. bullatum; while of the Heliolepis series the best specimen was that of an unnamed species from China, shown by E. J. P. Magor, Esq.; there were also good trusses of R. polylepis and Wilson's Seedling.

In the section for sprays of species of the Lapponicum series, A. M. Williams, Esq. was awarded the first prize; he showed a well-flowered branch of R. russatum, while other exhibits were of R. hippophaeoides, R. impeditum, the yellow R. chryseum and R. fastigiatum. P.D.Williams, Esq., was successful in the section for species of the Lepidotum group; and R. Barclay Fox, Esq., was awarded the first prize in the class for a spray of R. Augustinii. A. M. Williams, Esq., showed the best spray, one heavily laden with richly-coloured blooms, in the R. oreotrephes section.

Several species were represented of the Triflorum group, G. W. E. Loder, Esq., receiving the first prize for a fine spray of R. charianthum, with beautiful, pale rose-lilac blooms; while other noteworthy exhibits were of R. yunnanense, R. chartophyllum, R. praecox and the type, R. triflorum. There were also well-flowered sprays of the yellow R. ambiguum and R. Searsiae.

Admiral Walker-Heneage-Vivian excelled in the class for single trusses of any large-flowered hybrid, with a lovely Falconeri hybrid, creamy-white. faintly tinged with pink; there was also a fine R. Hodgsoni hybrid shown, with flowers of the palest purplish-pink. C. E. Heath, Esq., was first in the section for hybrids between R. Aucklandii and R. Fortunei, with a fine truss of R. Loderi, while R. Loderi var. King George was also well shown. For hybrids between R. Aucklandii and another species Lady Aberconway and the Hon. H. D. McLaren were awarded the first prize for R. Penjerrick, with beautiful wax-like blooms,creamy-white, flushed with palest pink.

In the section for any hybrid between R. Aucklandii and any other hybrid, Lady Aberconway and the Hon. H. D. McLaren were placed first with a fine truss of a hybrid between R. Kewense and R. Aucklandii, with large, spreading flowers of palest pink, flushed with a deeper shade on the margins; while in the section for any hybrid of R. campylocarpum they were again successful with R. Penjerrick; other varieties staged in this section being a pale lemon coloured campylocarpum × Kewense; and one between R. campylocarpum and R. gloxinaeflora, with pale cream flowers spotted with purple on the upper petals; there were several other unnamed hybrids shown in various shades of cream and pink.

Of R. Thomsonii hybrids there were several excellent trusses shown, the best being that by Dame Alice Godman, of a hybrid with R. Fortunei as the other parent, which had large, rich purplish red blooms. Gilian, with rather larger and brighter flowers than R. Thomsonii; and Richard Gill, with large, rich purplish-rose flowers, were two well-exhibited hybrids in this class.

In the section for other hybrids between two species, the majority of the exhibits were disqualified, Lady Aberconway and the Hon. H. D. McLaren being the successful exhibitors with a truss of R. Soulking, which has rather small, claret-red blooms, borne in a compact head.

Lionel de Rothschild, Esq., showed a good hybrid between R. J. G. Millais and R. neriiflorum, with frilled, vivid scarlet flowers, for which he was awarded the first prize in the class for hybrids raised by the exhibitor and not previously shown; while he was also successful with an unnamed Azaleodendron, very Rhododendron-like in appearance, with a compact head of rich rose-red flowers. The only other Azaleodendron staged was the cream, pale yellowish-orange-marked Glory of Littleworth, the flowers of which are borne in rather loose heads.

There were two exhibits of deciduous Rhododendrons, including Azalea hybrids, Lionel de Rothschild, Esq., receiving the first prize for a fine Azalea with flaming, orange-scarlet flowers. In the class for sprays of evergreen Azalea hybrids or Kurumes, P. D. Williams, Esq., was first, with a wonderful branch, heavily-flowered, of the vivid rose-pink Hinomanyo; and Shin Siekayi, with creamy-white blooms, was also well shown.

Lady Aberconway and the Hon. H. D. McLaren were placed first in the class for hybrids of R. cinnabarinum, with a good hybrid with R. oreothrephes as the other parent, that had attractive pale purplish-rose blooms; while for hybrids of any alpine species there were only two exhibits, that by A. M. Williams, Esq., of a lovely hybrid of R. fastigiatum and R. Augustinii, with striking rich purplish-blue flowers; and another of R. rupicolum and R. fastigiatum, with small, reddish-purple blooms.

Lionel de Rothschild, Esq., included in his exhibit of six distinct hardy hybrids, for which he was placed first, fine blooms of Duchess of Portland, white; Mrs. Rose, a beautiful pink hybrid; and General Cavendish, rich scarlet.

Amateurs' Classes.

There were seven exceedingly meritorious groups of Rhododendrons in the two classes for amateurs, and the Challenge Cup was won by Lionel de Rothschild, Esq. (gr. Mr. A. Bedford), Exbury, Hampshire, with his exceedingly attractive and valuable collection in the class which allowed a hundred-and-twenty superficial feet of staging. Not only was the group composed of a great variety of excellent blooms, but the arrangement was especially attractive. A bold centre of Rhododendron Augustinii, encircled with glowing trusses of Glory of Leonardslee, was flanked by mounds of magnificent trusses of R. Loderi. There were also generous masses of Rose Perfection, Ivory's Scarlet, Loderi var. King George of great size and delightful colouring, the beautiful niveum and Van Ness 74, a hybrid bearing large trusses of rich pink-coloured flowers curiously marked with plentiful crimson spots.

The judges failed to discriminate between the groups of Lady Aberconway, Bodnant, North Wales, and Lady Loder, Leonardslee, Horsham, so took refuge in awarding them equal second prizes. Lady Aberconway had an effective and very interesting group which included, in the centre, such a splendid plant of R. campylocarpum that it was awarded the Special Prize offered for the best plant in the show. In front of this plant there were large vases of Beauty of Tremough. Other large-flowered varieties of note included the varieties Penjerrick, Gill's Triumph, Glory of Leonardslee and orbiculare. In the foreground there were sprays of the pretty Kurume Azaleas, with Rhododendron fastigiatum, R. glaucum and other interesting little sorts. Lady Loder's group was chiefly noteworthy for the large masses of magnificent trusses of R. Loderi, and such of its varieties as Pinky and Fairy Queen, of charming colouring. There were also trusses of R. Griffithianum, bearing immense flowers, and its cross with R. Thomsonii. Other fine hybrids were R. decorum × Thomsonii, a rich pink truss; and R. Fortunei × Thomsonii, of bright pink colour. Sir John Ramsden, Bt., Bulstrode, Bucks., had a very showy group which contained masses of Ascot Brilliant, Ivory's Scarlet, Fortunei × Thomsonii, of beautiful colour and many other good Rhododendrons. Admiral A. Walker-Heneage-Vivian, Clynne Castle, Swansea, included Glory of Penjerrick, Ascot Brilliant, Thomsonii, Loderi, with many more sorts, in a meritorious group.

The judges experienced what is feared will become their customary difficulty, in the class for a smaller group of Rhododendrons, and again took refuge in awarding equal prizes, although we imagine that most others with a knowledge of Rhododendrons would have placed the group of Colonel Stephenson R. Clarke, Borde Hill, Cuckfield, unreservedly first. However, the judges in their wisdom and final judgment placed it equal first with that of J. C. Williams, Esq., Caerhays, Goran, Cornwall. The former group was composed of really good sprays, arranged very attractively, and they were clearly named. In the centre there was an immense truss of R. Loderi, of perfect form and great beauty. Other sorts of outstanding merit were Cornish Cross, Penjerrick Pink, neriiflorum, of rich colour, Pink Diamond, a bright pink Gauntletii × Thomsonii, Fortunei × Campylocarpum var. Mary, cinnabarinum and spinuliferum. In the group exhibited by Mr. J. C. Williams there were several vases of R. Mrs. Butler, a R. campylocarpum hybrid bearing good-sized flowers of delicate pink flushing; R. sperabile, of glowing cardinal red; R. apodectrum, a small truss of pendulous, bronzy-yellow flowers; R. haematodes, R. Hanceanum and other rare Rhododendrons.

The class for a single truss of each of twelve species was very popular and induced seven good exhibits. The first prize was won by E. J. P. Magor, Esq., Lamellan, St. Tudy, Cornwall, who included trusses of R. neriiflorum, R. haematodes, R. niveum, and a white R. arboreum. Gerald W. E. Loder, Esq., Wakehurst Place, Ardingly, was a good second, and he had campylocarpum, neriflorum, Thomsonii, an Falconeri, of great merit. Lady Aberconway was first amongst seven exhibitors of twelve hybrids, staging magnificent trusses of Beauty of Tremough, S. G. Millais, Glory of Penjerrick, a pale pink Keverne × Aucklandii, and a most beautiful truss of Fortunei × Thomsonii var. Richard Gill. Lady Loder was second, showing lovely trusses of Loderi var. King George, Pride of Leonardslee and Leonardslee Ruby in her exhibit. J. J. Crossfield, Esq., Embley Park, Romsey, was a good third in the strong class.

The four trusses of distinct hybrids which won the first prize for R. Barclay Fox, Esq., Penjerrick, Cornwall, were Cornish Cross, Barclayi, of shining ruby-red colour; Penjerrick and White Penjerrick. P. D. Williams, Esq., who was second, included a handsome truss of campylocarpum × Fortunei. The best three species were R. arboreum, R. haematodes and R. rhabocarpum, shown by the Earl of Stair. Lionel de Rothschild, Esq., was second. There were no fewer than fifteen exhibits of single trusses of three hybrids, not of identical parentage, and all were of very good quality. The first prize was won by G. H. Johnstone, Esq., Trewithen, Cornwall, with Mother of Pearl, a good decorum cross and Fortunei × Gill's Triumph. Admiral A. Walker-Heneage-Vivian, who was second, had a magnificent truss of R. Thomsonii × Fortunei.

Several non-competitive collections of Rhododendrons served to complete the attractions of this good show. Lionel de Rothschild, Esq., filled the corner space by the Tea Annexe with "spares" left over from his magnificent first prize display. Messrs. Robert Veitch and Son filled a considerable table space with an interesting collection of rare and hardy hybrids. This exhibit included Luscombe's Scarlet, Standishii, Cornish Cross, Aucklandii, Magnet, N. N. Sherwood, orbiculare and other desirable sorts. At the other side of the entrance Mr. G. Reuthe set out trusses of many varieties with a background of plants illustrating the magnificent foliage of such sorts as Elizabethiae magnificum, Elsae, Boothii and Hodgsonii.

The meeting of the Rhododendron Association, held during the afternoon, was of an informal nature. Lionel de Rothschild, Esq., presided over a gathering of about sixty members; he stated that it was the desire of the Committee the produce a Year Book so soon as funds would permit, and also to secure a salaried Secretary.

The Treasurer briefly stated the financial position, and then appealed to the existing members to make every effort to increase the membership of the Association as without an increase in the number of subscriptions the prospect of producing the Year Book and paying a Secretary was very poor.

On the motion of the Chairman, Messrs. H. C. Richardson and Sons were appointed Auditors to the Association.

Votes of thanks were accorded to G. W. E. Loder, Esq., the Hon. H. D. McLaren, and J. J. Crossfield, Esq., for the Cups provided by them for competition; and to the Rhododendron Society for the presentation of their Medals.

On the motion of Mr. Elsey, the Chairman was thanked for his services to the Association, and the meeting then terminated.

BRITISH CARNATION.

April 26 and 27.—The show of perpetual-flowering Carnations which was held at the Royal Horticultural Hall, Westminster, on these dates, fully maintained the standard of previous shows with regard to the quality of the blooms but there were fewer exhibits, both of large trade collections and in the competitive classes. For some reason, not readily apparent in view of the great popularity of the flower, with commercial growers and private garden owners alike, the number of exhibitors was very small, and, in their respective sections, the same names appeared on the exhibitors' cards with monotonous regularity. There was an unfortunate misunderstanding between the conditions of some of the competitive classes as stated in the schedule and as set out on the exhibitors' cards, but this, luckily, did not prevent the visitors admiring the really excellent blooms in nearly all the classes. The competition for the *Daily Mail* Challenge Cup created considerable interest amongst competitors and the general public. Sufficient novelties to fill the tabling usually allotted to "New and Rare Plants," were submitted, but only one received recognition.

Award of Merit.

Maud Allwood.—This very attractive Fancy Carnation received the R.H.S. Award of Merit on November 15, 1927. The compact flowers are of medium size, good shape and the bright orange colour is lightly marked with lines of deeper shade. Fragrance is a rare attribute in greenhouse Carnations, but some of the more discerning. visitors discovered distinct perfume in this very attractive variety. Shown by Messrs. Allwood Brothers.

Open Classes.

Only Messrs. Allwood Brothers and Messrs. Engelmann, Ltd., competed in the chief open classes, and they shared most of the first and second prizes, with admirable exhibits. Messrs. C. Engelmann, Ltd., were awarded both the first and second prizes in the class for twenty-five blooms each of seven varieties. Their first prize exhibit, which was set out in tall glass vases, was composed of Master Michael Stoop, Ivory, Cupid, Delice, Topsy, Improved Circe and Red Laddie. The best three British Novelties were Dorcas, Hebe and Katja, staged by Messrs. C. Engelmann, Ltd. Velvet, a rich, ruby-red Fancy, Wivelsfield Copper and Maud Allwood, shown by Messrs. Allwood Brothers, were second. With a splendid vase of Laddie, Messrs. C. Engelmann, Ltd., were awarded the first prize for a vase of at least one hundred blooms of any variety. They also showed admirable vases of Nigger and Lady Northcliffe. Laddie, Maine Sunshine, Topsy and Spectrum were the four varieties shown by Messrs. Allwood Nrothers in their first prize vase of fifty blooms in four varieties. Messrs. C. Engelmann, Ltd., were a good second with Lady Hindlip, Improved Ward, Topsy and Laddie.

The variety Startler, shown by Messrs. C. Engelmann, Ltd., was the first prize British-raised Carnation, and they were also first with Topsy, and with Katja, Laddie and Saffron in the class for twenty-five blooms each of three varieties of distinct colours.

In the colour classes, Messrs. C. Engelmann, Ltd., won first prizes with the following:—Spes (deep pink), Red Laddie (red), Wanda (crimson), Katja (heliotrope Fancy), Duchess of York (pink-ground Fancy), and with a vase of twenty-five blooms of apricot and yellow shades. Messrs. Allwood Brothers, who were second in these classes, won first prizes for White Pearl, Laddie (light pink), Mary Allwood medium pink) and Maud Allwood (yellow Fancy), in which classes the second prizes were awarded to Messrs. C. Engelmann, Ltd.

Amateurs' Classes.

There were two very good exhibits of twelve plants of perpetual-flowering varieties, and the Lord Howard de Walden's Challenge Vase was won by the New Lodge Clinic (gr. Mr.

William Holden), Windsor Forest, Berkshire with particularly well-grown plants of such varieties as Baroness de Brienen, Carola, Cinderella and White Pearl. The Marquis of Salisbury (gr. Mr. R. H. Hall), Hatfield, Hertfordshire, was second, and he also staged admirable plants, but the flowers were not fully expanded.

The competition for the Reginald Cory Cup was responsible for several especially good displays of cut Carnations. Sir Randolf Baker, Bt. (gr. Mr. A. E. Usher), Ranston, Blandford, was first with superlative blooms of Red Laddie, Lady Baker, White Pearl, Mrs. Hamilton Fellowes and other good varieties The Marquis of Salisbury, in his good second prize display, included Canadian Pink, Edward Allwood and White Pearl. Sir Randolf Baker also won first prizes with a vase of twenty-four blooms in not fewer than four varieties, and with the following in the colour classes: Lady Baker (light pink), Mary Allwood (medium pink), Tarzan (red), Topsy (crimson), Mrs. Hamilton Fellowes (purple), Saffron (yellow), and Miss S. Baker (Fancy). Col. George Herbert, Knowle House, Salisbury, won first prize with a very good single vase of White Pearl.

The various Decorative exhibits all displayed considerable artistic skill and taste. Mrs. A. M. Swan, Colwood Lodge, Haywards Heath, was first with a very tasteful dinner table of orange and yellow Fancy Carnations, and the New Lodge Clinic Gardens were a very good second. The Covent Garden Trophy, offered for exhibits by a florist, illustrating the various artistic uses of Carnations, was awarded to Messrs. Robert Green, Ltd., for admirable examples of their art, and they were also first with a novel and effective dinner table decoration.

The competition for the *Daily Mail* Cup was a source of considerable interest to numbers of the visitors who possessed divergent views as to the relative fragrance of the varieties. The Cup is offered for the best scented Carnation not in commerce prior to 1926, and it was awarded to the variety Mavis, a well-formed variety of a pleasing soft shade of pink, and decidedly fragrant. It was shown by Mr. Walter Henus, Stourton Nursery, Hansworth Middlesex. The rich crimson Mrs. A. J. Cobb, which won the Cup last year, was placed second. This magnificent variety was not quite so good as Mr. A. F. Dutton has shown it on many previous occasions.

Red Devon, a variety shown by Lt.-Col. E. G. Evans, Trevean, Halberton. Tiverton, has good perfume of the old Clove type, but the crimson flowers lack quality. The Lady Seaforth, which received an R.H.S. Award of Merit on the previous Tuesday was entered, but the flowers were faded. Evelyn Townley, shown by R. Chetwynd-Stapleton, Esq., Headlands, Great Berkhamstead, is a fragrant, bright cerise variety. Cattleya Mauve and Allwood's Pink Seedling, both shown by Messrs. Allwood Brothers, also have pleasant fragrance.

NON-COMPETITIVE EXHIBITS.

Magnificent displays of Carnations set up by Messrs. C. Engelmann, Ltd., and by Messrs. Allwood Brothers were rewarded with the Society's Large Gold Medals. Messrs. C. Engelmann, Ltd., displayed their blooms in attractive jars with trails of Asparagus Sprengeri. Their principal varieties were Topsy, Aviator, Circe Improved, Jazzy, White Pearl, White Wonder and Saffron, with several vases of good unnamed seedlings. Messrs. Allwood Brothers also staged some very promising seedlings, and their chief varieties were Velvet, Laddie, Topsy, Edward Allwood, Maine Sunshine, Jessie Allwood, Maud Allwood and Spectrum. They also displayed varieties of Dianthus Allwoodii in an attractive setting of green moss.

Mr. A. F. Dutton showed several large vases of Mrs. A. J. Cobb and Lady Northcliffe. Lt.-Col. E. G. Evans brought several interesting plants of "Little Beauty" Carnations a very dwarf type of the second generation, in several distinct colours, which he has raised from Biston Wonder and Golden Idol.

Obituary.

George Muirhead, LL.D.—The death, recently, of Dr. George Muirhead, for many years Commissioner on the vast Scottish estates of the Duke of Richmond and Gordon, has called forth from many public bodies with whom he was connected warm tributes of respect and esteem. The *Scottish Naturalist* describes Dr. Muirhead as a naturalist of wide interests, of more than local recognition as an ornithologist, and expert in salmon-breeding and floriculture, and one who succeeded in hatching salmon through the smolt stage to the grilse stage. Speaking at a recent meeting of the Moray Field Club, the President, Rev. George Birnie, B.D., described Dr. Muirhead as a distinguished scientist. He was also an enthusiastic alpine botanist, who had explored the Rocky Mountains, the Pyrenees and other ranges on the continent. In his rock garden at Speybank, Fochabers, he had a magnificent collection of alpine plants, which it was always a delight to inspect. He will best be remembered, however, for his two volumes on *The Birds of Berwickshire*, compiled during his residence in that county. It is much more comprehensive than the ordinary local fauna, for it includes poetical extracts as well as historical and traditional lore relating to birds of the county. Mr. Birnie designates the work a classic. Dr. Muirhead was also a very close student of fruit-bearing, which he investigated in a thorough and scientific manner. Ornithology, however, was his forte, and his researches in that department of natural history will long keep Dr. Muirhead in remembrance in the world of science.

William C. Tait.—In Mr. William C. Tait, of Entre Quintas, Oporto, Portugal, whose recent death is announced, a fine type of Englishman has passed away. Born in 1844, Mr. Tait became in due course, head of the prosperous firm of Tait and Co., Merchants, at Oporto, and Agents for the Royal Marine Steam Packet Co. Besides excelling in field sports, he had a great range of interests. He was an accomplished ornithologist, a gardener, and introducer of oversea plants, especially those likely to be economically important for the country of his adoption. In later life, several estates, with which he was connected in different parts of Portugal, gave him full scope to indulge his hobby for acclimatising trees. At Abrantes, on the Tagus, he raised two Eucalyptus woods on a commercial scale, and these were profitably disposed of during the war. This was a pioneer effort in the exploiting of a tree which holds great possibilities for Portugal—for construction, wood-pulp, and the staves of wine barrels. At the extensive Comporta estate, south of Lisbon (of which he became part owner a few years ago), with its salt-marshes, old sand dunes and irrigation ground, where Rice could be raised, he kept himself busy experimenting with different Australian, South African and South American maritime plants. In the tilling of the ground he was progressive, introducing tractors, with caterpillars, etc., where requisite, although retaining ox-ploughing when the traditional method had advantages. A book he studied continually was Von Mueller's *Select Extra-Tropical Plants*, a compilation of world plants, with their uses, which Von Mueller deemed serviceable for Australia. He continually imported seeds of anything which he thought might establish and make good. In the last year of his life he was distributing seedlings of Grape Fruit raised in his Oporto garden. This garden, although moderate in size, was famous for a very large Tulip Tree and also for its Magnolias. It was beautifully laid out on uneven ground (terraced), and ablaze with festoons of colour, such as the Portuguese love. One of his brokers, who specialised in Daffodils—for which the flora is noted—helped Peter Barr a good deal. Tait used to tell a story about the introduction of a small Narcissus of the Triandrus section which Barr wanted. His broker commissioned his German collector, whose name was Anghel, to secure this plant, and in due course he turned up with a sack of bulbs of what proved to be N. Triandrus albus, but as it differed slightly from Barr's specification, and fearing he was disappointing him, and being a very emotional man, Anghel wept copiously. However, Barr, well pleased, marched off with the plunder, and at the same time, got the idea for the name of "Angel's Tears," by which the bulb is everywhere known. In earlier days, Mr. Tait corresponded with Darwin and sent him living specimens of the Portuguese Sundew (Drosophyllum lusitanicum) to experiment with when he was working on insectivorous plants. In his home he used to rear wolves taken in winter from the Abrantes estate. When they grew too old to be desirable as domestic pests he would bring them to England for the Zoological Gardens and other collections. His book on *The Birds of Portugal* (Witherby, 1924) is the standard work on the subject. Mr. Tait was widely known and welcomed wherever he went in Portugal. He maintained his activity to the last. *F. W. Oliver.*

ANSWERS TO CORRESPONDENTS.

Names of Plants.—*D. C.* The specimen is not a pure Rhododendron arboreum, but one of the numerous hybrids between that species and R. caucasicum.—*R. G.* The flower reached us in such a dried and damaged condition that it could not be determined; send a fresh specimen, together with leaves and as complete an inflorescence as possible.—*G. A. J.* 1, Erica arborea; 2, Rhododendron Lady Alice Fitzwilliam.—*J. A. P.* Hermodactylus tuberosus.

Tomatos and Pteris Roots.—*A. J. B.* The hard, purplish-green Tomato plants submitted for examination are not attacked by mosaic disease. The condition of the plants is caused by either poorness of compost or too low a temperature. The day temperature of the houses should be maintained between 60° and 65°, and the night temperature should not be less that 55°. The only animal present in the Pteris roots was an Enchrytraeid worm which does no damage. The white fungus is a common soil fungus which is also harmless.

Rose Rust.—*J. A. M.* Although the rust disease (Phragmidium subcorticium) of Roses is occasionally a serious trouble to Rose growers; it is more prevalent in certain seasons than in others. Moreover, although no cultivated Rose appears to be immune, certain varieties of garden Roses are more susceptible than others. Early attacks should be guarded against by spraying the young leafage with weak Bordeaux mixture, or a solution of sulphide of potassium, or ammoniacal copper carbonate. As a period of about a fortnight elapses between the first sign of infection and the production of spores, it will be obvious that fortnightly sprayings are desirable after infection has been detected. All diseased leaves should be collected and burned and infested wood cut out and similarly treated. When an attack is experienced, all leaves should be collected and burned in the autumn, all dead and diseased growths cut out and burned, and the remainder of the bushes and their surroundings sprayed with Bordeaux mixture. Prune the bushes severely in the following spring and spray them with one of the suggested fungicides just before the leaves expand.

Vine Leaves.—*Constant Reader.*—The appearance and texture of the leaves certainly indicate something wrong with the border, which may be exhausted and need renovating. This, however, can only be done in the autumn. For the present try an application of muriate of potash (two ounces per square yard), and later on work in plenty of farmyard manure. Do not let the vines bear too heavily, stop them about two feet and thin out well. Thoroughly renovate the whole of the border in autumn.

Communications Received. — F. B. — Altho. — W. A. T.—D. M. S.—A. C. F.—T. H. L.—H. N. G.—J. H. B.—E. C.—R. H.—J. A. J.—A. H. L.—W. B.—W. A.—R. A.—J. W.—A. T. H.—R. G.—G. I.—M. W.—W. G.—S. B.—J. G. W.—A. F.—E. B.—J. H. F.

TRADE NOTES.

Mr. A. F. Dutton writes: "I feel that a great injustice has been done to my novelty, Carnation Mrs. A. J. Cobb, as very large quantities have been sold, and the purchasers may be under an impression that the variety has been superseded, as Mavis was awarded the *Daily Mail* Gold Cup in competition with Mrs. A. J. Cobb. I should like to point out that confidence may be retained in the variety, as the total of points awarded to Mrs. A. J. Cobb under an agreed schedule of points was seven higher than the winner; points for fragrance for my variety were thirty-five against forty for Mavis, and the total aggregate of points for Mrs. A. J. Cobb was seventy-three against seventy-one for Mavis, the latter winning on points of fragrance only. I trust this explanation will be appreciated by those interested in Carnation novelties."

A demonstration of fruit-tree spraying was given by Mr. G. Glenny, on his fruit farm at Surfleet, near Spalding, on April 24, when he showed to an interested company the use of his new Glenny (Patent) Ejector High Velocity Nozzle, which is claimed to be particularly useful against capsid bug. Amongst the fruit-growers present were Captain J. C. Wallace and Mr. E. E. Edwards, of the Kirton Agricultural Institute; Mr. Dillon-Weston and Dr. Petherbridge, of the Cambridge Horticultural School; Mr. Kent, Horticultural Superintendent of the Isle of Ely; Mr. Paskett, Superintendent of Cambridge; and Mr. H. B. Teagle, Secretary of the Fruit-growers' Association. Many growers were also present from the Wisbech and Lynn districts. The spraying on Mr. Glenny's farm is worked by a petrol engine, at the rear of which is a tank in which two hundred gallons of the required mixture are put. The liquid is mixed by two fans, and then passes through piping, which leads all over the fruit farm, hosing being connected to this with which to spray the trees. The nozzle referred to is well-made, and is attached to a strong rod. It is contended for this new nozzle that it ejects the liquid at a much greater pressure, distributing five to seven gallons of liquid per minute, at fifty per cent. less cost.

We learn from Messrs. Charles H. Pugh, Ltd., the makers of the Atco motor-mowers, that the popularity of the push-mower continues to decline rapidly in favour of the motor-mower, and they state that they have now more than nineteen-thousand machines in service. Their service organisation is firmly established, and they have also embraced the hire-purchase mode of selling; we believe that deposits from as low as £8 are accepted.

Patents and Trade Marks.—Any of our readers requiring information and advice respecting Patents, Trade Marks or Designs, should apply to Messrs. Rayner and Co., Patent Agents, of 5, Chancery Lane, London, who will give free advice to readers mentioning *The Gardeners' Chronicle*.

GARDENING APPOINTMENTS.

Mr. J. Watson, for the past eleven years Gardener at Pixholme Court, Dorking, Surrey, as Gardener to C. P. Scrbcold, Esq., Three Ford, Send, Surrey.

Mr. F. W. Green, for six years Gardener at Stenapshan Hall, Norwich, and previously for two years at Coldham Hall, Bury St. Edmunds, as Gardener to A. H. Gunn, Esq., Mundesley House, Mundesley, Norfolk.

Mr. R. Habgood, for the past five years Gardener and Bailiff to Col. A. D. Acland, O.B.E., as Steward and Gardener to the same gentleman at Feniton Court, Honiton, South Devon. (Thanks for 2/6 for R.G.O.F. Box.—Eds.)

Mr. F. France, for three years Gardener and Bailiff to G. D. Haslam, Esq., Danehurst, Sussex, as Gardener to James Groves, Esq., Heathfield Park, Sussex. (Thanks for 2/6 for R.G.O.F. Box.—Eds.)

MARKETS.

COVENT GARDEN, Tuesday, May 1st, 1928.

Cut Flowers, etc.: Average Wholesale Prices.

	s. d.	s. d.
Adiantum decorum, doz. bun.	12 0	15 0
—cuneatum, per doz. bun. ...	8 0	10 0
Anemones, St. Brigid, per doz. bun. ...	3 0	4 0
Arums (Richardia), per doz. blooms ...	4 0	5 0
Asparagus plumosus, per bun. long trails ...	2 6	3 6
—med. sprays	2 0	2 6
short „ ...	—	1 0
—Sprengeri, bun. long sprays...	2 0	2 6
med. „ ...	1 0	1 6
short „ ...	0 6	1 9
Camellias, 12's or 18's, per box	2 6	3 0
Carnations, per doz. blooms	2 6	4 6
Croton leaves, per doz. ...	1 9	2 6
Daffodils, per doz. bun.—		
—Emperor ...	5 0	6 0
—Barrii conspicuus ...	4 0	4 6
—grandis ...	5 0	6 0
Ferns, French, per doz. bun.	10 0	12 0
Forget-me-nots, per doz. bun.	8 0	10 0
Gardenias, per doz. blooms ...	6 0	9 0
Gladiolus, The Bride, per doz. bun.	15 0	18 0
— Blushing Bride, per doz. bun.	12 0	15 0
— Peach Blossom, per doz. bun.	15 0	16 0
Heather, white, per doz. bun.	—	12 0
Hydrangea, white, per doz. bun.	36 0	48 0
— pink, per doz. bun.	24 0	30 0
Iris, per doz. blooms—		
—blue	1 6	2 0
—white ...	1 6	2 0
—yellow ..	2 0	2 6
—mauve ...	1 6	2 0
Ixia, scarlet, per doz. bun. ...	4 0	5 0
—mixed, per doz. bun. ...	4 0	5 0
Laparageria, white, per doz. blooms	4 0	4 6
Lilac, white, per doz. sprays...	4 0	6 0
—mauve, per doz. spikes ...	6 0	7 0
Lilium longiflorum, long, per bun.	2 0	2 6
— —short, doz. blooms ...	2 0	2 6
Lily-of-the-Valley, per doz. bun.	24 0	36 0
Marigolds, per doz. bun. ...	3 0	4 0
Myrtle, green, per doz. bun.	1 6	2 6
Narcissus Poeticus, per doz. bun.	3 0	3 6
—Elvira, per doz. bun. ...	4 0	4 6
—double white, per doz. bun.	12 0	15 0
Orchids, per doz.		
—Cattleyas ...	21 0	30 0
—Cypripediums	8 0	10 0
Pelargoniums, white, per doz. bun.	9 0	10 0
Roses, per doz. blooms—		
—Butterfly ...	3 0	4 0
—Columbia ...	3 6	4 0
—Golden Ophelia	3 6	4 0
—Richmond ...	3 6	5 0
—Aaron Ward	2 6	3 0
—Roselandia...	3 6	4 6
—Hoosier Beauty	4 0	5 0
—Molly Crawford	3 0	4 0
Smilax, per doz. trails ...	7 0	8 0
Stephanotis, 72 pips	3 0	3 6
Sweet Peas, various, per doz. bun.	9 0	18 0
Tulips, per doz. bun.—		
— single, white	9 0	15 0
— — red ...	9 0	12 0
— — pink ...	9 0	15 0
— — mauve ...	10 0	15 0
— — yellow ...	15 0	18 0
Viola Cornuta, per doz. bun.	1 6	2 6
Wallflowers, per doz. bun. ...	3 0	4 0
French flowers—		
—Gypsophila, white, per doz. bun. ...	4 0	5 0
—Marguerites, yellow, per doz. bun. ...	3 0	3 6
—Stock, double white, per doz. bun.	4 0	5 0

Remarks.—The general supplies in the cut flower department during the last few days have been the heaviest received this season, and with the exception of small white blooms, required for making-up purposes, such as double white Stocks, Pelargoniums and cut white Hydrangeas, prices have fallen considerably. Carnations, Lilium longiflorum and Roses have been more than sufficient to meet the daily requirements, while outdoor Tulips are much finer in quality and the supplies are increasing. Irises are in very good condition. Home-grown Daffodils are now practically finished, but some very fine blooms of Emperor are available from Scotland. The newest arrivals are a few blooms of Lapagerias, Iceland Poppies and small consignments of Gladioli Blushing Bride, G. Peach Blossom and G. The Bride. A few bunches of single Pyrethrums were on sale to-day. In the pot plant department business is considerably more brisk, the most attractive line being some very fine Rhododendrons in pots, also some large rambler Roses, Hydrangeas, Ericas, Boronias, white and coloured Stocks, Marguerites, Mignonette, Pelargoniums, Acacias, Acer negundo and Funkias. A few pots of Lilium longiflorum are on offer. Bedding plants are now attracting more attention.

Fruit: Average Wholesale Prices.

	s. d.	s. d.
Apples, English—		
—Bramley's Seedling ...	7 0	14 0
—Newton Wonders	8 0	10 0
Apples, American—		
—Newtowns ...	10 0	13 0
Apples, New Zealand—		
—Cox's ...	14 0	17 6
—Jonathan ...	12 0	13 6
—Dunn's ...	10 0	12 0
—Others ...	8 0	9 0
Apples, Australian—		
—Cox's Victorias	14 0	16 0
—Jonathans ...	10 0	12 0
—Ribston ...	8 6	10 0
—Cleos	12 0	13 0
—Alfriston ...	—	10 0
Bananas ...	14 0	25 0
Gooseberries, per lb.	1 4	1 6
Grapes, English—		
—Hambro, per lb.	4 0	5 0
Grapes, Australian—		
—Coimar ...	20 0	25 0
—Ohanez ...	20 0	22 6
—Black Malaga	16 0	18 0
Grape Fruit—		
—Blue Goose...	42 6	45 0
—Jamaica ...	—	32 6
Lemons, Messina and Palermo, per case ...	14 0	20 0
—boxes ...	11 0	15 0

Fruit—cont.

	s. d.	s. d.
Oranges, per case—		
—Valencia and Denia, per case	18 0	35 0
—Almeria ...	20 0	32 6
—Jaffa ...	18 0	19 0
Strawberries, per lb.	6 0	12 0
South African Fruits—		
Grapes—		
—Waltham X .	10 0	12 0
—Raisin Blanc	10 0	15 0
—Henab Turki	10 0	12 0
Pears, New Zealand—		
—B. Bosc ...	4 0	5 0
—Josephine de Malines ...	5 0	7 6
—Pachham's Triumph ...	5 6	7 0
Pears—		
—Josephine de Malines ...	4 6	6 0
—W. Nelis ...	3 6	5 0
—Glou Morceau	3 0	4 0
Pineapples, per case	21 0	36 0

Remarks.—The recent improvement has been maintained, and active conditions are the rule in most departments. The South African section consists mainly of Pears and Grapes, both of which fruits are popular with the trade. Some good Pears are also arriving from Australia but prices on the whole are comparatively low. In the choice fruits section, Grapes, Strawberries and Peaches are the main features, in addition to a few Figs and Melons. There are still some English Bramley's Seedling and Newton Wonder Apples on the market, and those in good condition are realising good prices. The better weather conditions have brought along plentiful supplies of Cucumbers, but quotations are about the same as last week. Tomatos increase in quantity almost every day, and after a long period of stable values, there is an easier tendency in this section. Hothouse Beans are a good trade, but forced Beans are a weaker market. Guernsey Potatos keep on the scarce side, but prices are firm, although increasing quantities of Spanish new Potatos, which are advised to arrive, may affect values in the Guernsey section. Asparagus from France is now arriving in heavier quantities but selling prices are remarkably firm. The earliest Gooseberries have been marketed and made rather high prices, as is usual at this time of the year. Mushrooms after a period of plentitude, have again reached normal supplies, and prices are steadier. Forced Marrows are an improved line. Salads keep scarce and dear, supplies being much below requirements, particularly during the spell of warm weather recently experienced. Tomatos from the Canary Islands are making more money. The old Potato trade keeps firm with a steady demand, but the important shipments of Spanish Potatos now due will probably have some effect on the market for old Potatos.

GLASGOW.

The flower market displayed more activity during the past week, when price movements reflected an irregular tendency. Cheap Tulips were plentiful and difficult to sell, but better-class blooms realised the following prices:—Clara Butt, 10d. to 1s. 2d.; Bartigon, William Copland, Bourton d'Or and Princess Elizabeth, 9d. to 1s.; special, 1s. to 1s. 3d; William Saunders, 10d. to 1s.; special, 1s. to 1s. 2d.; Madame Krelage, 10d. to 1s.; White Swan, Parisian White, Pride of Haarlem and Greuze, 8d. to 10d. Irises in all colours made 1s. 9d. to 2s. 6d. per dozen; and Carnations, 2s. 6d. to 4s. Pink Roses were worth from 3s. to 5s.; yellow, 2s. to 3s. 6d.; red, 1s. 6d. to 3s.; and white, 1s. 6d. to 3s. 6d.; Daffodils were dearer, Emperor ranging from 2s. 6d. to 3s. 6d. per dozen bunches; Sir Watkin, 2s. to 2s. 6d.; Ornatus, 1s. to 1s. 9d.; special, 1s. 9d. to 3s.; and named varieties, 6d. per bunch. Lilium longiflorum sold at 2s. 6d. to 3s. per bunch; Arums (Richardias), 3s. to 4s. per dozen; Lily-of-the-Valley, 2s. 6d. to 3s. per bunch; Lilac, 1s. 3d. to 1s. 9d.; Anemones, 3d. to 5d.; and Geraniums, 5d. per bunch.

Improved quantities of bedding plants arrived daily, but as the season is too early yet, there was a limited demand at attractive prices, which were as follows:—Antirrhinums, 2s. per box; Stocks, 2s. to 3s. 6d.; Marigolds and Tagetes, 1s. 6d. to 2s.; Coltness Gem Dahlias, 3s. per dozen; Daisies, 1s. to 1s. 6d. per box; Rob Roy variety, 2s. per dozen; bedding Geraniums, 6s. 6d. to 8s. per dozen; Sweet Peas, 1s. per dozen; and Wallflowers, 2s. per box. Tomato plants, Bide's Recruit and Aldowrie Seedling sold at 14s. per 100; Ailsa Crag, grown in sterilised soil, 20s.

There was very little variety in the fruit market and dealings have been on the usual lines. Australian Jonathan and Ribston Pippin Apples were sold at 12s. 6d. to 14s. 6d. per case; American Winesap, 13s. to 15s. 6d.; Newtown Pippin, 56s. per barrel. Sound Jaffa Oranges, 144 counts averaged 19s. per case; 180's and 240's, 19s. 6d.; and 120's 17s. South African fruits are now improved to Grapes and Pears. Waltham Cross Grapes made 12s. per box of 10lbs.; Winter Nelis Pears, 4s. to 5s. 6d.; Josephine, 5s. to 6s.; Farrells, 4s. to 4s. 6d.; and Keiffers, 2s. 9d. Field Rhubarb made 10s. per cwt., and English Tomatos, 1s. 6d. to 1s. 8d. per lb.

SCHEDULES RECEIVED.

Reigate, Redhill and District Gardeners' Mutual Improvement Association.—Exhibition, to be held at Batts Hill, Redhill, on Wednesday, July 18.—Secretary, Mr. W. A. Dobson, Mabledon, Reigate Hill, Reigate.

Lee, Blackheath and Lewisham Horticultural Society.—Fifty-ninth exhibition, to be held on Monday, August 6, in the Drill Hall.—Secretary, Mr. H. G. Fennell, 95, Mount Pleasant Road, S.E.13.

West of England Chrysanthemum Society.—Exhibition, to be held in the Guildhall, Plymouth, on Tuesday, Wednesday and Thursday, November 6, 7 and 8.—Secretary, Mr. S. Collecott, 52, Cobourg Street, Plymouth.

THE
Gardeners' Chronicle

No. 2159.—*SATURDAY, MAY* 12, 1928.

CONTENTS.

Alpine garden—
  Nertera depressa ... 335
  Origanum hybridum 335
  Saxifraga James Bremner 335
Apiary notes 340
Apple growing, a new intensive system of commercial 340
Blinds for greenhouses, lath 340
Bushey Park and Hampton Court 330
Chelsea Show, 1928 ... 329
Flora of Moray, the ... 330
Flower garden—
  Cardamine pratensis fl. pl. 334
  Nycterinia selaginoides 334
Fruit garden—
  Strawberries ... 341
" Gardeners' Chronicle" seventy-five years ago 331
Hardy flower border—
  Geranium atlanticum 334
  Lychnis chalcedonica 334
Ideal gardens and plant lore 336
Indoor plants—
  Eustoma Russellianum 334
  Xanthosoma Lindeni 334
Kew Guild 330
Kew, spring flowers at 330
Mesembryanthemum . 338
Myosotis alpestris ... 342
Obituary—
  Robinson, F. ... 345
Orchid notes and gleanings—
  Ada aurantiaca ... 334
  Anguloas 334
  Laelio-Cattleya Anne Douglas Home 334
  Lycastes 334
Plants from collected seeds, raising ... 342
Plants, poisonous ... 338
Primula Conference at Chelsea 330
Primula, the genus ... 338
Pruning fruit trees ... 342
Ridley, Mr. H. N. ... 330
Roads of Remembrance 336
Royal Gardeners' Orphan Fund ... 329
Salix alba in the Oxford Botanic Garden ... 330
Societies—
  Manchester & North of England Orchid 345
  National Tulip ... 344
  Royal Horticultural 342
  Royal Horticultural of Ireland... ... 342
St. Fagan's Castle ... 337
Trees and shrubs—
  Fremontia mexicana 335
  Muehlenbeckia complexa 335
Tulips in the London Parks, British ... 331
Week's work, the ... 332

ILLUSTRATIONS.

Apple trees cultivated under a new intensive system, dwarf pyramid 341
Araucaria Bidwillii, fruiting branch of 331
Dactylopsis digitata 338, 339
Fremontia mexicana 335
Rhododendron keleticum 333
Rhododendrons, group of 343
Ridley, Mr. H. N., portrait of 330
Robinson, Francis, portrait of the late... 345
Saxifraga James Bremner 337

SUPPLEMENT PLATE.

Salix alba in the Oxford Botanic Garden.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 53.1°.

ACTUAL TEMPERATURE.—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London, Wednesday, May 9, 10 a.m. Bar. 31. Temp. 46°. Weather, fine.

The Royal Gardeners' Orphan Fund.

WITH the Gardeners' Royal Benevolent Institution in being and able to grant assistance to aged gardeners and their widows who have fallen on evil times, it was a natural corollary that there should be some means of assisting the orphans who had met with the overwhelming misfortune of being deprived of the bread-winner of the family. In view of our national love of children, it is passing strange this should have been so long in realisation, and that it was many years after the formation of the Gardeners' Royal Benevolent Institution that the Royal Gardeners' Orphan Fund was instituted. The circumstances which led directly to the formation of the Fund were that in the autumn of 1886 a gardener's widow wrote to a leading firm of seedsmen asking if there were any gardening societies which would assist her and her children. There were none, but the need inspired Mr. Charles Penny, the well-known gardener at Sandringham, then the home of the Prince of Wales, who became King Edward VII, to set the ball rolling. Mr. Penny wrote a letter to *The Journal of Horticulture*—now incorporated with *The Gardeners' Chronicle*—and it appeared on February 10, 1887, under the heading: "The Jubilee—A Gardeners' Orphanage." In this letter Mr. Penny urged the formation of a gardening charity to aid the orphan children of gardeners, and suggested that it might well be associated with the celebrations of the jubilee of Queen Victoria as a horticultural memorial of that event. The suggestion met with instant approval from all classes of horticulturists, and many letters appeared in the Press concerning the proposal. The chief correspondents, in addition to Mr. Penny, were Mr. J. Udale, Mr. J. H. Goodacre, Mr. D. T. Fish and Mr. C. H. Sharman. As always, there was some criticism, although in this case it was exceedingly little, and directed almost solely to the title suggested for the charity. A Gardener's Orphanage certainly did imply the provision of a permanent building but it was quickly made clear that this was not the intention of the chief supporters of the movement. In a sympathetic letter published in *The Gardening World* of March 12, 1887, Mr. A. F. Barron, then still at Chiswick, put the case against "bricks and mortar" very clearly, and suggested that a "fund" should be raised for the benefit of the orphans, and it is interesting to recall that this word was soon to be adopted and incorporated in the title of the charity. Mr. Barron pointed out that the best interests of the orphans would be served by keeping them with relations, so far as possible, and rearing them, not "as machines" in an institution, but "as loving human beings." As is now well-known, this has always been the policy of the management of the Fund. So quickly did matters move, once the idea was started, that in a month from the publication of Mr. Penny's initial letter he again wrote to the Press that he had the promises of two annual subscriptions—the first from Mr. E. J. Beale, of Messrs. James Carter and Co., and the second from Mr. William Bull, of Chelsea, while Messrs. Sutton and Sons had promised a donation of £10, and support was also promised by "Messrs. Veitch and Sons, Chelsea; Messrs. H. Low and Co., Clapton Nurseries, and several influential gardeners, who are willing to support the scheme." A provisional committee was formed, and it met in the Conservatory of the Royal Horticultural Society, South Kensington, on March 22, 1887, when it was definitely decided to form a fund to be called "The Gardeners' Orphan Fund." Mr. George Deal was in the chair, and there were also present, Dr. Maxwell T. Masters, Mr. B. S. Williams, Mr. C. Penny, Mr. James Hudson, Mr. Alex. Dean, Mr. John Wright, Mr. Brian Wynne, Mr. W. Roupell, Mr. G. T. Miles, Mr. W. G. Head and Mr. George Bunyard. A strong executive committee was formed, with Mr. J. Wright, Mr. B. Wynne and Mr. A. F. Barron as Honorary Secretaries. So well was the movement supported that by May 24 of the same year £586 11s. had been received, and this sum included 408 annual subscriptions of 5s. A general meeting was held on July 12, 1887, at South Kensington, under the chairmanship of Sir Julian Goldsmith, Bt., who had already given £100 to the Fund. At that time Sir Julian Goldsmith had fine gardens near Tunbridge Wells and in the south of France. Sir Julian was elected the first President of the Fund, and the following were elected Vice-Presidents: Mr. H. J. Adams, Mr. E. J. Beale, Mr. William Bull, Mr. Shirley Hibberd, Dr. Hogg, Dr. Maxwell T. Masters, Mr. J. M'Intosh, Mr. H. M. Pollett, Baron Schröder, Mr. A. W. Sutton, Mr. Harry J. Veitch and Mr. F. G. Tautz. The first elected Executive Committee was composed of Mr. Peter Barr, Mr. W. Bates, Mr. H. Cannell, Mr. Richard Dean, Mr. G. Deal, Mr. J. Douglas, Mr. W. Goldring, Mr. W. G. Head, Mr. H. Herbst, Mr. W. Holmes, Mr. J. Wood Ingram, Mr. John Laing, Mr. G. Nicholson, Mr. C. Penny, Mr. W. Richards, Mr. J. Roberts, Mr. W. Roupell, Mr. C. H. Sharman, Mr. J. Smith, Mr. Harry Turner, Mr. H. Williams, Mr. J. Woodbridge, Mr. John Wright and Mr. B. Wynne, with Mr. A. F. Barron as Secretary. Probably never before had so many names of such eminence in horticulture been associated in any cause, but it indicates how deeply felt was the need for help for the little ones. Soon after the formation of the Fund, Queen Victoria commanded that it should be known as the Royal Gardeners' Orphan Fund, and became its first Patron. In the fulness of time, Queen Victoria was succeeded by Queen Alexandra, and now Queen Mary honours the Fund by being its Patron. As we have suggested, the Fund is complementary to the Gardeners' Royal Benevolent Institution, with which it has much in common. Both exist to render aid to those in need. During its forty-one years of work the Royal Gardeners' Orphan Fund has distributed nearly £50,000 in weekly allowances of 5s., and grants of various amounts, in the support of over 550 orphan children of gardeners. This help has been of inestimable value to the widows, as it has made it possible for them to keep their children at home and provide for them far better than otherwise would be the case. While the maximum age for the children to benefit from the Fund is fifteen years, the Committee exercises its power of extending the period in special cases. During recent years, several of the children have won scholarships at their schools, which, through the help of the Fund, they have been able to take up and so fit themselves better for their work in after life, to the benefit of the community as well as themselves. In other cases the grant which has been made by the Committee towards an outfit when the child starts work has been a great relief to the mother. The Fund has been fortunate in having such men as Mr. George Deal, Mr. William Marshall, Mr. Henry B. May, and Mr. David Ingamells as Chairmen of Committee. It has always received great financial support from the trade and from garden owners, but, as with the older Charity, gardeners as a class have failed to realise their responsibilities and to support the Fund. We suggest that the occasion of the Annual Festival Dinner, which takes place next Wednesday, offers a splendid opportunity for gardeners all over the country, who may not already subscribe, to do so, and send a subscription to the Secretary, Mr. A. C. Bartlett, at 19, Bedford Chambers, Covent Garden, W.C.2. The minimum subscription asked is only 5s. a year.

Chelsea Show, 1928.—This year, the Royal Horticultural Society's Great Spring Show will be held in the grounds of the Royal Hospital Chelsea, on Wednesday, Thursday and Friday, May 23, 24 and 25. On the first day, Wednesday, May 23, there will be a private view for Fellows and their friends from 8 a.m. to 12 noon, and on Thursday, May 24, from 8 a.m. to 10 a.m. Only Fellows' and Associates' tickets will admit at the private view, but transferable as well as non-transferable tickets may be used. There will be no admission by payment on Wednesday, May 23, until 12 noon, and on Thursday, May 24, until 10 a.m., when the show will be opened to the public. Those who propose to submit new or rare plants to the Committees for Certificates should remember that the Committees will not meet on the first day of the show, but at 6.30 p.m. on the previous evening, therefore such new plants must be entered with the Secretaries of the respective Committees by 3 p.m. on Tuesday, May 22. The Secretaries of the Committees will be in attendance to receive entries from 10 a.m. Vans will not be admitted to the show grounds on Tuesday, May 22, after 2 p.m.

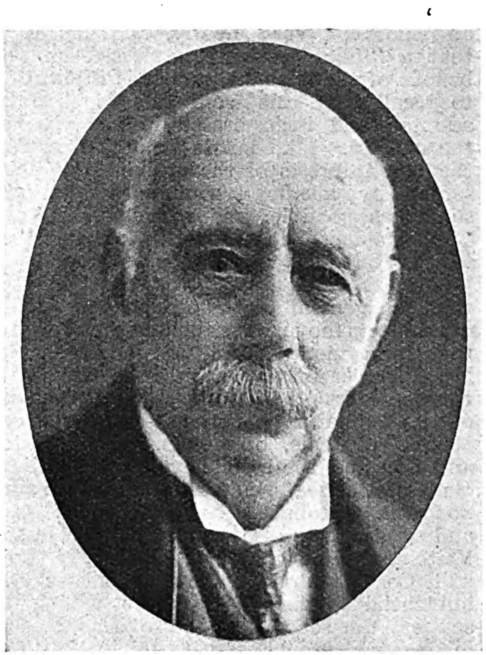
Salix alba in the Oxford Botanic Garden.—There are many fine, fully-developed trees in the Oxford Botanic Garden, but none more graceful or attractive than the splendid specimen of Salix alba, which is the subject of the Supplement Plate presented with the present issue. Mr. W. G. Baker, the Curator, informs us that this noble tree is sixty-five feet high, has a spread of seventy feet, and the girth of the trunk at five feet from the ground is sixteen feet three inches. The tree is perfectly sound and vigorous but, alas ! Mr. Baker has not been able to trace its history—a history which the late Professor Charles Sargent was anxious to discover.

Bushey Park and Hampton Court.—Beauty is a great attraction, and even the simple beauty of the Horse Chestnut has power to attract many thousands of people annually, especially when it is reproduced in hundreds of thousands of spikes of bloom on the noble trees which form the fine avenue in Bushey Park. During the past week, Londoners and country cousins have made the pilgrimage to Bushey Park and extended their tour to the gardens of Hampton Court, where Tulips, Polyanthuses and other spring-flowering subjects have been at their best, providing a floral treat well worth a long journey to enjoy.

Kew Guild.—The Annual General Meeting and Dinner (morning dress) will be held on Thursday, May 24, 1928, in the Clarendon Restaurant, Broadway, Hammersmith, W. 6. Mr. Walter Irving, the retiring President, will occupy the chair at the meeting, which will begin at 6.30 p.m., whilst Mr. W. N. Sands, F.L.S., President Elect for 1928-9, will preside over the dinner, to commence at 7.30 p.m. The dinner tickets will be 7/- each (exclusive of wines, etc.). Members who intend to be present should notify Mr. R. F. Williams, 107, Kew Road, Kew, not later than May 19.

All London Gardens Championship. — The *Daily Express* and the London Gardens Guild are organising an all-London Gardens Championship for the third successive year. Prizes to the value of over £700 are being offered in this endeavour to make London " a city of flowers." We believe this endeavour will ultimately succeed, with the help of similar organisations, the assistance of many local horticultural societies in the London area, and the cleaner atmosphere resulting from smoke abatement. The principal prizes offered in the above competition are £50 and a Silver Championship Trophy for the best back garden ; £10 and a Gold Medal for a back garden over seventy-five square yards ; and £10 and a Gold Medal for a back garden under seventy-five square yards ; similar prizes are offered for the best front garden and for window boxes, roof gardens and balcony displays. In addition, many other awards will be granted in various localities, where the merits of the gardens warrant them, while a novel feature is the offer of £50 and Gold Medals for the best road of gardens, the qualifications being not fewer than eight adjacent gardens on one side of a road ; the owner of each garden in the " winning road " will receive a Gold Medal and a share of the £50. Further, the local horticultural society in the " winning road " area will receive a donation of £10. Entry forms may be obtained from local secretaries or the *Daily Express* Gardens Championships, 9, Gower Street, W.C.1.

Spring Flowers at Kew. — The beautiful weather which characterised the past week-end attracted thousands of people to the Royal Gardens, Kew, where they revelled in the sunshine and thoroughly enjoyed the display of Tulips, the Lilacs and Thorns, early spring flowers in the rock garden, and last, but not least, the myriads of Bluebells in the Queen's Cottage grounds.



MR. H. N. RIDLEY, C.M.G., F.R.S.

Mr. H. N. Ridley, C.M.G., F.R.S.—After devoting the early part of his life to zoology and geology, Mr. Henry Nicholas Ridley began to collect plants in 1875. He had no instruction in botany except a few lectures by Professor Lawson, at Oxford. There being no vacancy in the British Museum, except in the Botanical Department, he succeeded to Dr. Trimen's post there when he left in 1880, took charge of the Monocotyledons, and set about collecting plants in England for local floras, especially with Mr. W. Fawcett, in Dorset, for Mr. Mansell Pleydell's *Flora* ; he also collected in South Ireland, Norway and Switzerland. In 1887, with the Rev. T. S. Lea and Mr. G. Ramage, he explored Fernando Noronha and collected the flora, fauna and minerals of that island, and the flora of the mainland, Pernambuco. These collections are in the British Museum. In 1888, Mr. Ridley became Director of the Botanic Gardens, Singapore, and on his way out visited Professor Beccari at Florence and Dr. Trimen at Peradeniya, in Ceylon, where he remained one month. The Singapore Gardens were two hundred acres in extent, part horticultural and part used for economic plants. Mr. Ridley had also under his control the Government House grounds and the Malacca and Penang Botanic Gardens. Practically nothing was known of the Malaya flora then ; but as the Forest Department also came under his care he collected herbarium specimens and living plants during inspection trips to Singapore, Malacca, Penang, Dindings, etc., and also made expeditions to all parts of the Malay Peninsula, Java, Sumatra, Borneo and Christmas Island, collecting large numbers of living and dried plants. Herbarium specimens, of which he distributed 2,000 a year, were sent to Kew, the British Museum and Calcutta, and a good herbarium was formed in Singapore. The living plants were cultivated in the Gardens, and many were sent to Kew, and in 1906 the annual volume of the *Botanic Magazine* was dedicated to " Henry Nicholas Ridley, M.A., F.L.S., Director, Botanic Gardens, Singapore, who, with untiring energy, surpassed all recent contributions in enriching the Kew collections with rare and novel plants." The plants collected by him, and figured in the *Botanical Magazine*, include :— Microstylis Scottii, Gynura sarmentosa, Stemona Curtisii, Cypripedium Exul, Neuwiedia Griffithii, N. Lindleyi, Piptospatha Ridleyi, Gamogyne pulchra, Epipremnum giganteum, Aristolochia ungulifolia, Lowea maxillarioides, Trichopus malayanus, Pterisanthes polita, Torenia atropurpurea, Tristellateia australis, Nicolaia hemisphaerica, Dischidia hirsuta, Tupistra grandis, Sarcochilus lilacinus, Cryptocoryne Griffithii, Pinanga disticha, Dipodium pictum, Zingiber spectabile, Pandanus Houllettii, Bulbophyllum galbinum, Eranthemum malaccense, E. lilacinum, Chirita rupestris, and Peliosanthes violacea—a goodly list. The Singapore Gardens were laid out by Murton in 1877, in undulating fashion, with fine lakes and a few acres of original forest ; under cultivation they soon proved one of the most picturesque and rich gardens of the kind in the world. Four hundred kinds of Palms were grown, and the collection of Aroids was very extensive. The foliage plants, Codiaeums, Cordylines, Calanthes and similar subjects were very attractive, as were the beds of flowering shrubs and herbs and Cannas, of which some grew to a height of fifteen feet. Plants and seeds were distributed largely every year, not only to the local residents, but to all parts of the world, and there was usually some new and attractive plant to show and export each year. A great deal of Mr. Ridley's time had to be devoted to work with economic plants, herbarium work and to the bringing out of an Agricultural *Bulletin*, of which he wrote the greater part himself, as well as articles on botany and general natural history for various publications, including the local *Journal* of the Straits Branch of the Royal Asiatic Society, of which he was editor, so that he was kept hard at work. Mr. Ridley retired in 1912 and devoted himself to writing and bringing out the *Flora of the Malay Peninsula* in five volumes, and other botanical work, but he made collecting expeditions during several winters to the Malay Peninsula, Java, Sumatra, Borneo and Jamaica. Previously to leaving the Straits he had also visited and collected to some extent in Annam, Cambodia, Burma, Siam, Ceylon and, in 1912, he visited India. Mr. Ridley's wonderful botanical collections, amounting to about 50,000 specimens from various countries, are preserved chiefly at Kew, the Natural History Museum, Singapore and Calcutta, as well as in Buitenzorg, Berlin, and other herbaria ; the species he discovered as new to science are about 3,000 in number. Mr. Ridley has done a vast amount of excellent work for the Empire and particularly for the Straits Settlements and Kew. He is a Fellow of the Royal Society and a hard-working Fellow of the Linnean Society. His services have been recognised by the Government by the honour of Companion of the Order of St. Michael and St. George, and recently (see p. 222) he was awarded the Frank N. Meyer Medal of the United States Department of Agriculture for his work in establishing the Para Rubber tree in the Oriental Tropics. He is a delightful companion and possesses a wealth of stories gathered, like his specimens and plants, over a very large part of the world.

The Flora of Moray.—The announcement is now definitely made that Mr. J. J. Burgess, M.A., late Secretary of the Moray Field Club, is to undertake the collection of the records of the Club, with a view to compiling material for a " Flora of Moray," which, it is hoped, will be put into book form. The Rev. George Birnie, B.D., Chairman of the Club, has warmly espoused the proposal. He declares such a work would be of great value. There are many who could aid in the task besides botanists now living in the county of Moray, and he mentioned in addition to Mr. Burgess, Mr. Alexander Macgregor, M.A., Aberdeen, and Mr. William R. Watt, B.Sc., now resident in India. He believes also that Professor Craib, Professor of Botany at Aberdeen University, will be willing to give advice and assistance.

Primula Conference at Chelsea.—A Conference on Primulas, the third the Royal Horticultural Society has held, will take place in a special tent adjoining the Primula Exhibition Tent, at the Chelsea Show, on Thursday, May 24. The Conference will be open at 11 a.m, and will probably be continued in the afternoon. Admission to the Conference will be free, but by ticket only. Tickets are obtainable from the Society's offices at Vincent Square, or on application at the Enquiry Tent and at the Information Bureau in the Scientific Tent in the Show grounds. The subjects to be dealt with include, in addition to a review of recent work on the classification of the genus: "The Cultivation of some new and uncommon Primulas," by Mr. J. Adamson; "Eastern Primulas for the Garden," by the Hon. H. E. McLaren; "Chinese Primulas at Home," by Dr. Handel Mazetti; "Hybrids of the Vernales Group of Primula," by Professor H. W. Heslop Harrison, F.R.S.; "Hybrids of Primula Juliae, with the Primrose and the Oxlip," by Dr. C. L. Huskins; "Old Garden Primroses," by Mr. C. W. Needham; "Primula kewensis," by Miss C. Pellew; and "Inheritance in Primula sinensis," by Miss D. de Winton. Lt.-Col. Sir David Prain, F.R.S., V.M.H., will preside over the Conference.

Summer Games in London Parks.—The summer season in the parks and playing fields under the control of the London County Council commenced on Saturday, April 28. In previous years, May 1 has been the official opening day, but in order that the players might take advantage of the Saturday half-holiday, the Council put the date forward. This year, we learn that the Council are adding seven hard tennis courts, three grass courts, six putting greens, two reserved cricket pitches and one bowling green to those already in existence. Last year the total number of lawn tennis players registered on the Council's books was 57,000, an increase of five per cent. on that of 1926. At Battersea Park four hard courts have been constructed for "padder" or "miniature" lawn tennis, the charge being threepence per game. In all, there are under the control of the Council, 654 grass and 130 hard tennis courts, 72 putting greens, 24 bowling greens, 338 reserved cricket pitches, and 257 association football pitches; as well as a large number of special pitches and grounds reserved for the use of school children during school hours.

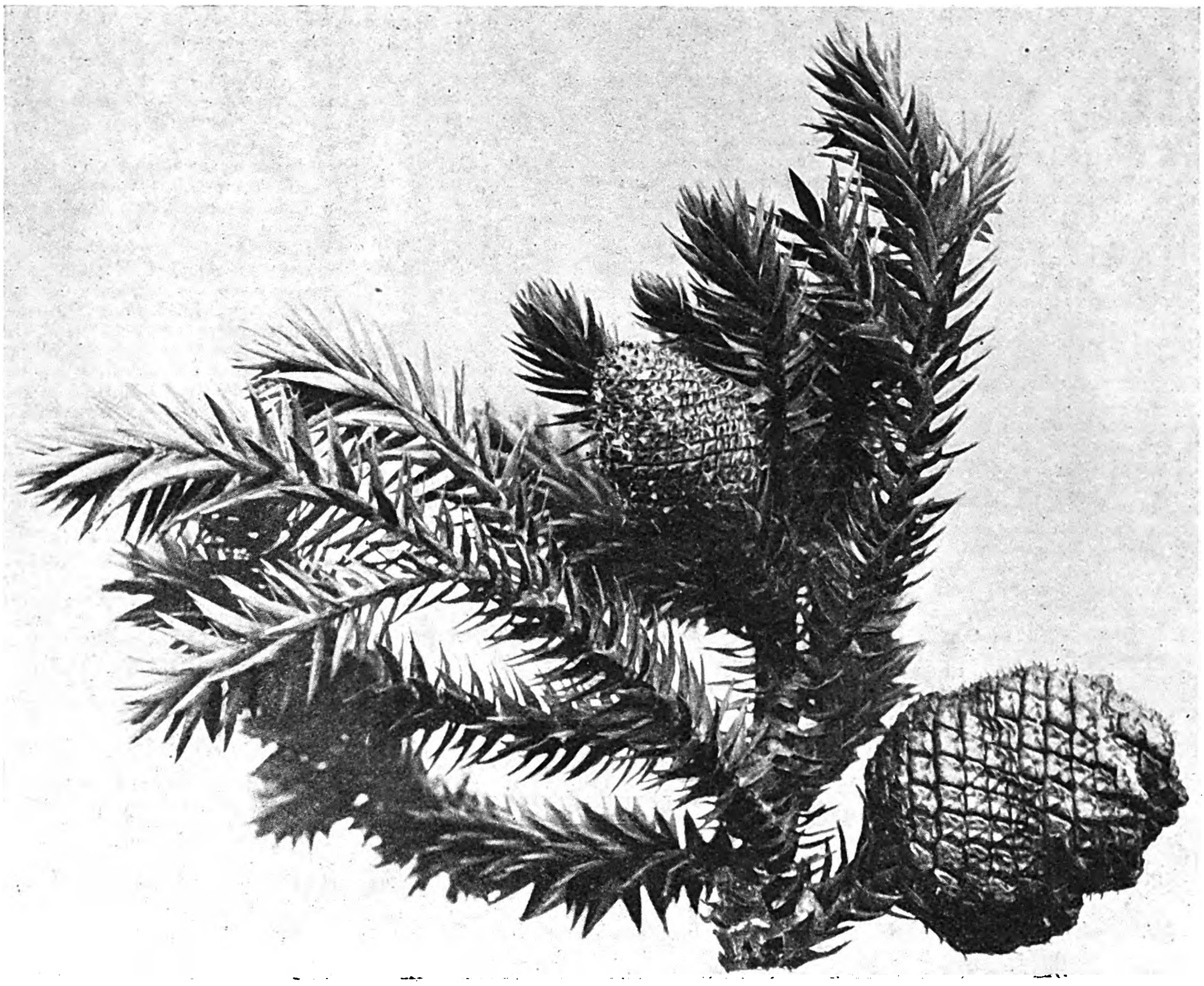


FIG. 156.—FRUITING BRANCH OF ARAUCARIA BIDWILLII.

Exhibited by R. Barclay Fox, Esq., Falmouth, at the Falmouth Spring Show, and at the exhibition of the Rhododendron Association on May 1 (see p. 302). This is considered to be the first example of out-door fruiting in England.

School for Young Gardeners in Rome.—A school has recently been opened at the San Sisto Public Nurseries, with the object of training a specialised staff for flower growing and the maintenance of parks and gardens. A three-years' course of instruction will be given and diplomas will be awarded to successful students. Sig. Galimberti, Director of the Public Parks and Open Spaces of the City of Rome, is responsible for the technical direction of the school; he will be assisted by Sig. O. Traversi, Chief Technical Officer of the Botanic Gardens of the Royal University of Rome, and other specialists.

British Tulips in London Parks.—The wonderful displays of Tulips in the London parks speak well for the quality of the bulbs produced by British Tulip growers. Some 170,000 Tulips, in eighty varieties, all British grown, have been used to provide these wonderful effects. It will be remembered that last year a collection of Tulips presented by Dutch growers occupied the prominent positions in Hyde Park and St. James's Park, but this year the Office of Works, in conjunction with the Empire Marketing Board, decided to give the British growers an opportunity, a decision that has been well justified.

Appointments for the Ensuing Week.—MONDAY, MAY 14: United Horticultural Benefit and Provident Society's meeting. WEDNESDAY, MAY 16: Royal Gardeners' Orphan Fund Annual Festival Dinner at Hotel Victoria. FRIDAY, MAY 18: British Mycological Society's Spring Foray at Oxford (five days).

"Gardeners' Chronicle" Seventy-five Years Ago.—*Cuthill's Black Prince Strawberry.*—When this Strawberry was first introduced, there were some doubts whether it would be so productive when forced as it proved to be in the open air. I was induced to give the sort a fair trial, from the favourable opinion my employer had given of them after visiting Mr. Cuthill's nursery at Camberwell, where he saw many plants with more than 20 blossoms, most of which came to maturity. Those I have forced this season have surpassed any other sort I have ever tried; they not only force remarkably well, but they come forward earlier and do certainly prove very prolific. I have counted from 150 to 200 blossoms on one plant, and have had sixty Strawberries ripe and ready for picking in the same pot. Never in all my experience have I witnessed such a display of blossom, as well as fruit. Although the fruit is not so large as that of Keen's Seedling, it is a good average size, but the flavour is certainly superior. I do not, therefore, hesitate in pronouncing the Black Prince to be a most valuable, as well as prolific Strawberry, enabling a gardener to supply his employer's table in abundance, and the market gardener to be well remunerated for his trouble. Before concluding, I beg to remark a peculiar variation in the blossoms, many of which are the usual colour, and others of a beautiful deep red. *Thos. Webb, Gardener to Sir Jasper Atkinson, North Frith, Hadlow, Kent. Gard. Chron., May 7, 1853.*

Publications Received.—*Selective Fertilization,* by Donald F. Jones; Cambridge University Press, Fetter Lane, E.C.; price 10/- net.—*Central Park: History and Design,* being the professional papers of Frederick Law Olmsted, Senior, Vol. II, edited by F. L. Olmsted, Junior, and T. Kimball; G. P. Putnam's Sons, London; price £1 11s. 6d.

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN MOORE, Manchester.

Routine Work.—With the advent of warmer weather and the consequent increase in the temperatures of the houses, especially in the warmer divisions, where the extra solar heat should be beneficial to the growing plants, careful attention should be given to shading, ventilation and atmospheric moisture. The floors and lower stages should be damped down as occasions demand, while the plants should benefit by frequent syringings between the pots and light dampings overhead on hot days. The ventilators should be used so as to allow a free circulation of air and a buoyant atmosphere, and if they are closed in the afternoon in the warm divisions to create the necessary rise in temperature, they should be opened slightly in the evening to keep the atmosphere from becoming stuffy, a condition which should be avoided, if possible, in every Orchid house. Water should be given at the roots according to the stage of growth of the various plants; those well rooted should not remain dry for long periods at this season, although care should be taken to avoid the compost remaining saturated for any length of time, which is often the cause of roots decaying. An increased supply should be required later in the season as the growths are nearing completion. If the houses accommodating the cool-growing Orchids, Odontoglossums, etc., are so situated as to receive the full day's sunshine, and are inclined to keep hot and dry, extra shading may be given with good results, either by providing an extra blind during the hottest part of the day, or a thin coat of some suitable shading on the glass. Hall's distemper is very suitable and diluted easily with water, and it may be applied cold. This distemper has an advantage over other water paints, in that it may be removed easily from the glass when not required. Ample ventilation should be given in the cool houses both night and day, and fire-heat should not be necessary for several weeks, unless we get a cold, wet spell of weather, when only sufficient fire-heat will be needed to keep the atmosphere buoyant. If the plants are sprayed with a weak solution of an approved insecticide every ten days it should keep thrips and other pests in check. In low-lying districts it is not advisable to damp down too heavily during the afternoons in the cool houses, especially when both top and bottom ventilators are used at night.

Seedling Orchids.—Seedling plants of the various genera are more active now, and robust plants fill the pots with roots quickly, and should therefore be repotted when necessary to obtain vigorous plants of flowering size so soon as possible. Those approaching this latter stage should be placed where they may receive more light than is allowed the smaller and newly potted subjects.

THE KITCHEN GARDEN.

By ALLAN FALCONER, Gardener to the Cheadle Royal Mental Hospital, Cheadle, Cheshire.

Mint.—New plantations of Mint may now be made by planting the young growths, with roots attached, one foot apart each way in well-prepared, rather moist, ground. If this may be done during showery weather it may be advantageous, and the bed should produce a good crop for use towards the end of the summer, when the permanent bed begins to deteriorate. Hoeing during the early stages of growth should be beneficial. If a new bed of Mint is made each year, the three-year-old plants may be lifted for forcing. If only small quantities are required for forcing, cuttings may be dibbled into boxes during the summer, and placed into a cold frame until rooted, when they may be stood outside; very early Mint may be produced by this method, for there is no disturbance at the roots. Tarragon may be treated in the same way.

Main-crop Beetroots.—Seeds should be sown in good ground, which was well-manured during the previous year; ground in which Celery has been grown should prove suitable. Draw the drills eighteen inches apart and two inches deep; sow the seeds rather thickly but evenly, and thin the seedlings to nine inches apart. During showery weather sprinkle soot or lime and wood-ashes over the bed. To produce exhibition roots a few holes may be bored one foot apart in the rows and three feet deep, filling them with finely sifted soil, to which has been added mortar-rubble, wood-ash, leaf-mould and sand. Sow five seeds in each hole, and finally leave the strongest seedling; a dusting of lime and wood-ashes scattered over the ground so soon as the seeds are sown should deter birds from disturbing the seeds.

Runner Beans.—A sowing of these may be made in boxes four inches deep, and placed in a cool house to germinate; so soon as the seedlings are well above the soil place them in cold frames to harden them for planting out towards the end of May, in trenches as previously advised. Runner Beans require plenty of room, and if planted in double rows they should be placed fifteen inches apart, with eighteen inches between the rows. The sticks should be put into position before planting, tying them to a wire to avoid their being damaged by strong winds. Another sowing should be made in the open ground at the time of planting these, thinning the seedlings to fifteen inches apart. Trouble is often experienced with slugs, which damage the young plants just beneath the surface of the ground, and when planting, as a preventive, dust some Sanitas powder into each hole, and also on the surface; this powder kills by contact, and is quite safe to use on the most tender plants.

Brussels Sprouts.—Those raised in cold frames should now be ready for planting out with three feet between the rows and two feet six inches between the plants; interplanting them with Cauliflowers is a convenient method of growing these subjects. Broccoli and Cauliflowers, which were pricked out in frames, may now be planted, and late Broccoli, Sprouting Broccoli and Kale and late Savoys should be sown for spring use; the method of sowing them where they are to remain is an advantage in some soils.

PLANTS UNDER GLASS.

By J. COUTTS, Assistant Curator, Royal Gardens, Kew.

Strobilanthes isophyllus.—Also known as Goldfussia isophylla, this subject is a very graceful plant of easy cultivation, and very useful for winter or early spring flowering. It may be propagated by means of cuttings, which root readily in a close case, and it grows freely in an intermediate temperature in any good potting compost. When in flower it should be transferred to the greenhouse or conservatory. To obtain bushy, well-furnished plants, it is necessary to pinch the growths several times during the growing season.

Strobilanthes Dyerianus.—This species is grown for its beautifully coloured foliage, and does best in a temperature of 60° to 65°. Cuttings root readily in a warm propagating case, and successional batches, according to requirements, should be inserted. This subject should be grown on without pinching the shoots, and the best effect is obtained by growing three or four plants in five- or six-inch pots.

Richardia africana.—As the Richardias pass out of flower they should be stood out-of-doors, at the foot of a south wall. Water should be withheld gradually as the foliage dies down, thus subjecting them to a ripening process before they are repotted at the end of the summer. Some cultivators prefer to plant them out for the summer months in well manured trenches.

Clerodendron fallax.—Plants of this species that were raised from seeds sown early in the year should be potted on as they require it to produce displays from August onwards. If plants are required for winter flowering in the stove they may be raised from seeds sown at this time, or they may be grown from cuttings obtained from old stock plants. This species grows freely in any good potting compost, and during its growing season enjoys a temperature of 60° to 65°.

FRUITS UNDER GLASS.

By T. PATEMAN, Gardener to SIR CHARLES NALL-CAIN, Brocket Hall, Hertfordshire.

Watering Fruit Borders.—There is no hard and fast rule as to when fruit tree borders require water, and there are several points to be considered. Much depends on the outside conditions, for should the weather be hot, with drying winds, the borders should dry more quickly. The health of the tree or vine, the depth of the border under treatment, and the efficiency of the drainage systems are all points to be considered. A tree or vine that is healthy and vigorous is more active in root action than an unhealthy one, therefore its water requirements are heavier, and shallow borders naturally require more frequent applications. Usually strong-growing vines, such as Black Alicante, Appley Towers and others may scarcely be overwatered during their growing season, provided that the borders are well drained. On the other hand, Muscats require more care when applying water to their roots, for if the borders are over-watered the soil may become sour and cause the berries to shank. By careful observation and testing of the borders, a thorough understanding of their water requirements should soon be obtained.

Cherries.—Trees growing in the cold orchard house should have all their growths stopped at the third or fourth leaf, and all subsequent ones removed at intervals during the growing season. Lime is necessary for stone fruits, and where the soil is deficient in this respect, it should be applied and watered in. Black aphis is one of the worst pests of Cherries, and so soon as they are detected, or, better still, before they appear, syringe the trees on two or three occasions with Quassia extract, diluted with rain water; or with some other insecticide recommended for this purpose.

Tomatos.—The earliest plants should now be cropping freely and should be fed systematically with approved fertilisers. If the plants are growing in twelve-inch pots, it is a good plan to mix the fertiliser with some fresh, rich soil and sprinkle it evenly over the surface, afterwards watering it. This treatment should be repeated about every ten days; the young roots should become very active near the soil surface, and the plant should remain in a healthy condition. This treatment may also be applied to plants growing in borders. Later Tomatos should be kept growing near the roof-glass to produce strong, short-jointed specimens for planting out in borders to produce a succession of fruits.

HARDY FRUIT GARDEN.

By T. E. TOMALIN, Gardener to the EARL OF BESSBOROUGH, Stansted Park, Emsworth, Sussex.

Raspberries.—Plants of the summer-fruiting type will now require attention in regard to the thinning of the young shoots, which are starting at the base of this year's fruiting canes. A sufficient number of the strongest and most suitably situated should be retained to replace this season's fruiting canes, and all superfluous suckers should be pulled up, afterwards hoeing the ground as advised for the autumn-fruiting section.

Gooseberries and Currants.—A watch should now be kept for the first signs of caterpillars on Gooseberries and Red and White Currant bushes. The larvae of the Gooseberry and Currant Sawfly, and, later on, of the Magpie Moth, are exceedingly destructive, and if unchecked may soon defoliate the bushes. Katakilla, sprayed on, should be found effective; being non-poisonous, it is a safe spray to use. Aphis is often troublesome on Gooseberries at this season, and if neglected may cripple the young growths badly. When this pest appears, the bushes should be sprayed thoroughly with Quassia extract on successive evenings until the insects are exterminated, after which a forcible spraying with clear, soft water should serve to cleanse the bushes and the young fruits.

Outdoor Vines.—Grape vines trained on walls having a southerly aspect should now be advanced sufficiently in growth to show the bunch bearing laterals. These should be thinned, leaving two to each spur, only one of which should be allowed to carry a bunch; the cutting off of the inferior bunches may be deferred for a time, until after the berries have set. The laterals should be stopped at the second leaf beyond the bunch, and subsequent growths at the first leaf, care being taken when training in the growths to avoid overcrowding. The berries should be thinned carefully when they commence to swell, and after thinning is completed a dressing of an approved vine manure should be applied to the border, and watered in well. Should mildew become troublesome, the vines may be sprayed with a weak solution of ammonium polysulphide.

Young Fruit Trees.—Many varieties of young Apple and Pear trees are showing quite an abnormal amount of blossom this season, and in some cases every bud on last season's growth has developed a flower truss. To preserve the symmetry of the trees the flowers should be removed carefully from the four uppermost buds at least, to encourage the latent wood buds to start. If fruits are allowed to form at the top of last season's shoots, the branches may become stunted, and the young trees may take years to recover their activity of growth.

THE FLOWER GARDEN.

By J. G. Weston, Gardener to the Duke of Devonshire, Chatsworth, Bakewell, Derbyshire.

Transplanting Hollies and other Evergreens.—This month is considered the best time in which to transplant Hollies, and as it is most important that no delay should occur when the shrubs are received, all preparations should be made in advance. If the Hollies are to be transplanted at home, everything should be in readiness before the roots are lifted, for if they are left exposed to a drying wind much injury may result. Large specimen plants may be moved without great risk, provided care is taken to move them with an unbroken ball of soil about the roots. When they are planted, make the soil thoroughly firm and soak them well with water. With large valuable plants, it is advisable to cut half-way round the roots the season previous to transplanting; they should then be in a better condition to withstand the check of transplanting. When the planting is completed, a mulch of leaf-soil, old potting soil, or spent Mushroom-bed manure should be applied, but if these materials are not available, short grass may be used with advantage, after loosening the surface soil. This should not be put on in large quantities, but should be renewed at intervals during the summer, especially during hot and dry spells. Constant attention is necessary in the matter of watering, and the shrubs should be sprayed lightly in the evenings until well established. Carefully stake and support all newly-transplanted shrubs or trees.

Bamboos.—No situations or conditions suit Bamboos so well as those that are suitable for Ferns and specimen foliage plants, with which they may be associated with splendid results. Draughty and wind-swept spots should be avoided. A shady dell or undulating situation, with a background of rather close-growing trees, such as Hollies, provide admirable conditions, and if there is a pool, or a shallow stream running through the ground selected for them, an ideal garden and one of quite unusual charm may be effected.

FOR NORTHERN GARDENERS.

By A. T. Harrison, Gardener at Jordanhill Training Centre, Glasgow.

Half-hardy Annuals.—This class of plants is well worthy of attention, as it contains many beautiful subjects which are comparatively easy to manage. Seedlings may still be pricked out into cold frames or boxes, and kept growing freely by closing the frames fairly early in the afternoon, after spraying or watering them when necessary. All are acquainted with the China Asters, which, incidentally, are not Asters, but improved forms of Callistephus chinensis, of which there are also beautiful single forms that are much in demand as cut flowers. The sweetly-scented Ten-week-Stocks, in a variety of shades, the newer Nemesias, Salpiglossis, Leptosynes, and many others, are all well worth growing, and should amply repay the labour spent upon them. Varieties of Begonia semperflorens may be treated as half-hardy annuals, but in order to secure good plants for bedding out during the same season, seeds should have been sown early in February, the tiny seedlings pricked out so soon as fit to handle, and then moved on from time to time, always allowing them more space at each operation.

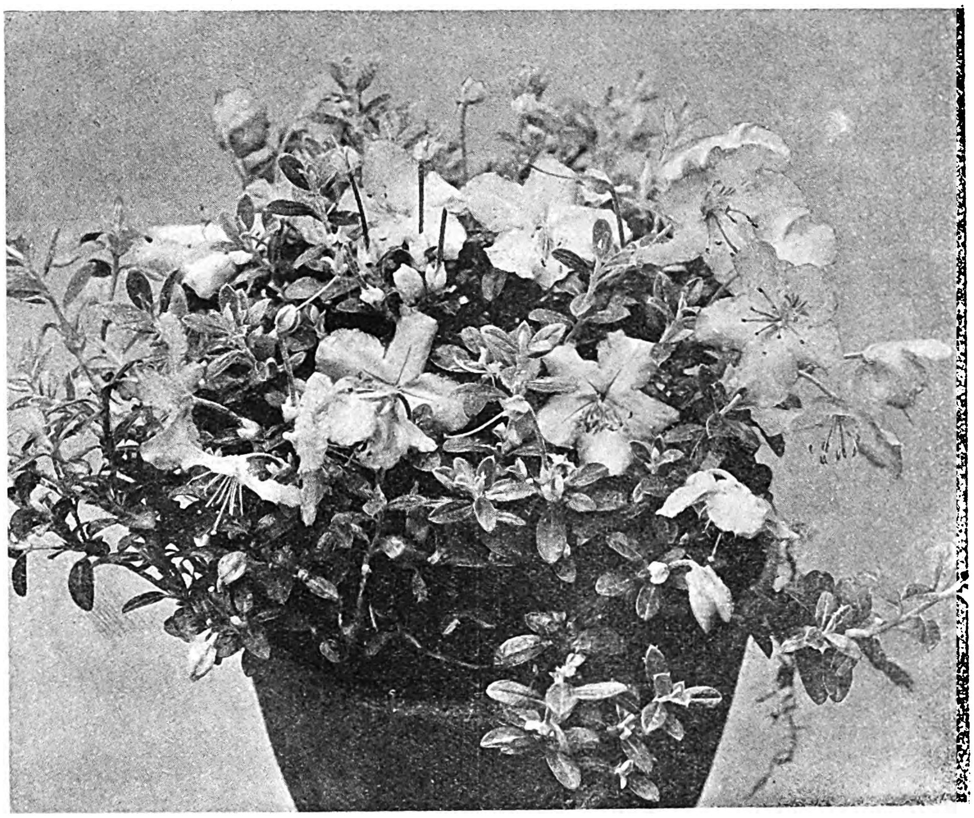


FIG. 157.—RHODODENDRON KELETICUM.

R.H.S. Award of Merit, May 1. Flowers lilac-mauve. Shown by Messrs. R. Gill and Son.

(see p. 324).

Annuals, Biennials and Perennials.—Into these three classes all plants are divided, and although many instances may be quoted where the dividing line is not clearly marked, such as Scabious, which may be treated as an annual; Nicotiana and Eschscholzia, both of which have been known to survive the winter in the open ground and start into growth again. Hardy annuals may still be sown in the open borders, and no collection of these should be considered complete without a plentiful supply of Mignonette, Sweet Alyssum and Night-scented Stocks, which, by their perfume, make up for many deficiencies from a floral point of view. Biennials and Perennials, if sown now, should be ready to plant during the autumn months, and so become well established before their season of flowering next year.

Planting Vegetables.—Vegetable plants which have been raised under glass in order to give them a longer growing season should now be ready to plant in their permanent quarters, and where these quarters have been well prepared in advance, a further stirring of the surface soil may be all that is necessary before setting out the plants. Onions should be planted in firm and rich soil, taking care not to put them in too deeply; should the weather remain dry, an occasional light spraying until they become established should assist them, after which heavier watering may be required. Early Celery plants may also be inserted in well-protected trenches, taking precautions to prevent them from receiving any check; if this occurs the plants are more likely to run to flower. Leeks for exhibition purposes should not be neglected at this stage, and if the trenches are not ready for their reception, the plants may be potted on into larger pots, rather than kept starving in small ones. Spring-sown Brussels Sprouts should also be planted in firm soil, preferably on ground that was well manured for a root crop last year and has since had no fresh manure added. Cauliflowers of the Autumn Giant varieties, and Cabbages such as Winningstadt, should also be planted out so soon as they are ready.

Pruning Shrubs.—Several early-flowering shrubs should now be pruned, as their flowering period is over for another season, and young growth is commencing. Where overgrown plants of Forsythias, Ribes, etc., are to be dealt with, these may be cut back well, but in most cases it is only necessary to remove any branches which are crossed or making the plants lop-sided, and so spoiling the symmetry of the bushes. Rhododendrons which have finished flowering should, in the case of young plants, have the immature seed-pods removed carefully by hand.

INDOOR PLANTS.

EUSTOMA RUSSELLIANUM.

This beautiful plant is generally regarded as difficult to grow, and one seldom sees it in good condition. Seeds should be sown about the middle of May in a cool greenhouse, and during the first season the aim should be to produce stout rosettes of leaves to withstand the winter. If sown too early, or grown in too high a temperature, the plants may attempt to flower during late autumn or winter, and thus prevent a good display during the following season.

In their younger stages they should be grown in a light compost, but as they increase in size a mixture of medium loam, with just a little leaf-mould added and enough sand to keep the whole open and porous, should be suitable.

This subject grows naturally in a calcareous soil, and it should therefore be interesting to discover whether it may be grown more successfully with the addition of lime to the potting compost. Eustoma Russellianum is subject to attacks of thrips, and requires careful watering during all stages of its cultivation. Both pink and white-flowered forms sometimes appear, and may be propagated by means of cuttings. *J. C.*

XANTHOSOMA LINDENI.

This fine Aroid is an attractive feature of any collection of stove foliage plants; the hastate-oblong leaves are about one foot in length, glabrous except for the midrib, and deep green in colour, relieved by the ivory-white midrib and numerous veins of the same colour. This subject is often referred to as Phyllotaenium Lindeni.

Propagation is effected easily by cutting the stem or rhizome into portions, and placing them in light soil or fibre over bottom heat; a secondary method is to insert the growths which are developed from the severed rootstocks. This once-prized plant thrives in a rich, light, well-drained soil, and requires treatment similar to that afforded Alocasias.

X. Lindeni was introduced from New Grenada in 1871. *Ralph E. Arnold.*

ORCHID NOTES AND GLEANINGS.

LYCASTES.

Numerous species of this genus, including the many varieties of L. Skinneri, L. costata, L. cruenta, L. macrophylla and the distinct L. Locusta, also the hybrids derived from these such as L. Balliae, L. Imschootiana, and the beautiful natural hybrid, L. Tunstillii, make a display of flowers over a long period. As they pass out of flower any necessary attention at the roots may be given.

Plants that have sufficient pot room, with the compost and roots in good condition, may be left undisturbed, but those which have outgrown their receptacles, or are in need of fresh rooting material, should be shaken out, cleaned and repotted in fresh compost. Keep the base of the bulb just below the rim of the pot and leave enough space for copious watering when growth is active.

ANGULOAS.

Members of this interesting genus such as A. Clowesii, A. Ruckeri, A. Cliftoni and A. uniflora and its varieties, are now starting into growth, and many are developing their flower spikes from the bases of the pseudo-bulbs. These may be given an increased amount of water at the roots, but care should be taken to prevent the compost from remaining in a saturated condition for any length of time, for the roots may decay quickly. When flowering is finished, repotting may be done.

These Orchids are robust growers; pots are the best receptacles and ample drainage is necessary, while a compost of fibrous loam, A.1. fibre and Sphagnum-moss, in a fairly rough condition, with plenty of broken crocks and charcoal, should suit them admirably. When repotting, turn the plants out of the pots, remove most of the old compost, all decayed roots and useless back bulbs, and press the new compost firmly amongst the roots. Keep the base of the bulb just below the pot rim, and avoid covering any of the new growths. Copious waterings may be required after the roots are well established in the new soil, but when growth is complete the supply should be reduced gradually, and a decided rest should be allowed.

Anguloas succeed at the cool end of the intermediate house, in a buoyant atmosphere, if shaded from bright sunshine. Allow a free circulation of air when the plants are rooting freely, and never allow water to collect in the young growths for they decay quickly. The foliage should be examined frequently for red spider and other insect pests which, if detected, should be removed by careful sponging.

ADA AURANTIACA.

This well-known, free-flowering Orchid is worthy of a place in every collection, for it is easily grown, and the brightly-coloured flowers make a fine display for several weeks. After the flowering period is over, new roots will be produced and any necessary repotting may be done, using a good open compost of coarse A.1. fibre and Sphagnum-moss, and a quantity of broken charcoal to keep it open. Water the plants sparingly until the roots are well established in the new soil, after which a good supply should be required.

Plants of Ada aurantiaca grow well in a shady position at the warm end of the Odontoglossum house during the summer months, and succeed best if removed to the cool end of the intermediate house for the winter. Scale insects often attack them, especially if they are grown under conditions which are too warm, and these should be removed by careful sponging. *W. G.*

LAELIO-CATTLEYA ANNE DOUGLAS HOME.

This handsome Laelio-Cattleya, obtained by crossing L.-C. Linda with C. Hardyana, has large flowers of perfect shape. The sepals and petals are rosy-mauve, while the large, wide lip is of rich ruby colour. This promising hybrid, raised by Mr. F. Hanbury, flowered recently at Brockhurst, East Grinstead.

FLOWER GARDEN.

NYCTERINIA SELAGINOIDES.

The name here given was applied by Don in *Sweet's British Flower Garden*, Series 2, t. 239, and is that by which the plant is best known in this country; in botanical books it is hidden away under the name of Zaluzianskya selaginoides.

It was much more common forty and fifty years ago than it is at present, although seeds of it are still obtainable. The flowers are small, pale blue and white, chiefly the latter, borne in corymbs or trusses, and sweetly perfumed towards the evening. Sweet-smelling flowers are often asked for, but apparently those of this plant are too small to appeal to the majority of modern cultivators, who desire large and showy blooms. This also applies to another small-flowered, but pretty and sweet-smelling annual named Schizopetalon Walkeri, with white flowers, but seldom seen in gardens.

Although the Nycterinia is only a half-hardy annual from South Africa, it may be sown in the open in May. *J. F.*

CARDAMINE PRATENSIS FL. PL.

The double-flowered Lady's Smock, or Cuckoo Flower, is one of the most attractive plants that are employed to provide the spring floral display in our gardens. It is a natural sport and there seems to be no record of its introduction. Its beauty may be seen to advantage if it is employed in conjunction with other subjects in borders of spring flowers, in beds, on the rock garden, or naturalised on the margins of streams and ponds, and when once established —a simple matter—it cares for itself and increases, each season producing beautiful sprays of double, lilac-coloured blooms.

All are familiar with Cardamine pratensis, so abundant in our native meadows, but the double form is not so well known, no doubt on account of the commonness of the type, which would naturally seem to detract from the value of the double form as a garden decorative subject. However, it is indeed beautiful, and well deserving of more general culture.

Cardamine pratensis fl. pl. is one of the easiest plants to propagate, for practically every leaf may be converted into an individual plant. If, when the flowers have faded, the stems are cut into portions, each with a single node, spread on moist soil and lightly covered with a layer of sand, every portion should produce roots; they should be placed in a cool frame or in a shaded place out-of-doors and kept moderately moist. When rooted, if potted singly or planted in nursery beds of loamy soil, they should make excellent material for planting in their permanent quarters during the autumn to produce a bright display during the following spring.

The double-flowered Lady's Smock does not, of necessity, have to be planted in wet situations to secure good results, for it should flourish and flower abundantly if planted in beds of loamy soil, containing plenty of humus, in not too sunny, but on the other hand, not heavily shaded positions. *M. W.*

HARDY FLOWER BORDER.

GERANIUM ATLANTICUM.

If it is not so showy a plant as many another of its race, G. atlanticum (malvaeflorum) is too distinct to be passed over by any lover of the Cranesbills. Although it hails from the Atlas Mountains, it is quite hardy in a light, free soil, and is the first of its kind to come into bloom. A fleshy-rooted perennial, G. atlanticum begins its growth in autumn, producing in response to the first September rains a dense colony of leaves. These are round, nearly two inches across, deeply and finely cut, and each is borne singly on its six-inch stalk like those of G. grandiflorum. This pale green and somewhat silky foliage survives the winter and in April the flowers appear. They are well over one-inch across, saucer-shaped, and of a rich violet-mauve, with red veinings. They are carried in a cluster at the head of a sturdy stem which rises well above the tops of the leaves, and as they open in succession, the flowering period is prolonged throughout the spring.

G. atlanticum is not a free bloomer with me, but it would doubtless do better if rested during midsummer by drying off beneath a hand-light. The leaves usually begin to disappear in July, and that, I think, is the best time to do any shifting that may be required. This species does not set seeds here, but division affords a ready means of increase. *N. Wales.*

LYCHNIS CHALCEDONICA.

This species is an old garden favourite that may be used in association with other herbaceous plants to produce a very vivid effect. It is a hardy perennial, its strong, leafy growths attaining a height of up to four feet; these are crowned with large, terminal heads of brilliant scarlet flowers, which, when seen *en masse*, form one of the striking features of the border during the summer; to secure the finest effect it is advisable to grow this subject in large groups.

It is a vigorous grower and is increased easily by division, while an abundance of seeds is invariably produced which, if sown early in the year, should give rise to plants that may flower in the summer of the same year, and by the following summer they should form large clumps.

Lychnis chalcedonica undoubtedly repays good cultivation and revels in deep, rich, well-worked soil; it likes sun, and it is in sunshine that its flowers are most prominent and are dazzling in their brilliancy. There are several forms of this species in cultivation, including a pale pinkish one, but none of them is, in my opinion, so useful as the type. *M. W.*

ALPINE GARDEN.

SAXIFRAGA JAMES BREMNER.

This fine Saxifrage was raised at Mr. Charles Scrase Dickins's garden, Coolhurst, Horsham, and is named after his gardener, Mr. James Bremner. It is of robust habit, carrying well-developed leaves of Saxifraga decipiens type; the stems are sturdy, nine to ten inches long; the flowers are pure white, and of good texture, with soft, pale green pencillings, which give them expressive eyes. The individual blooms measure one-and-a-half inch across, and the flowering period is a lengthy one. Three rosettes planted in December, 1926, produced, in fifteen months, the free-flowering plant shown in the accompanying photograph (Fig. 159, p. 337). S. James Bremner is an attractive and useful addition to both alpine house and rock garden. It received an Award of Merit at the R.H.S. of Ireland Spring Show this year. *Phylis Moore, Rathfarnham, Co. Dublin.*

NERTERA DEPRESSA.

It would be of service to many growers of what, for convenience, we call alpine flowers, to learn where we might have a reasonable expectation of cultivating Nertera depressa without losing it in winter. It is easier to say where it will not survive, as in most gardens it succumbs to the severity of our winters. Even the late Mr. Farrer, who says it "will be happy out-of-doors in a sheltered, shady corner of the rockwork, in damp, sandy loam, and will even bear our winters," calls it only half-hardy, and qualifies his statement about its being happy out-of-doors, by adding that "pieces should always be dug off and potted up in autumn for safety's sake."

From the writer's experiences, even in a garden close to the Solway, as well as in some inland, all the qualifications above mentioned are necessary, as several times this desirable little New Zealander has been lost. Last year a plant was placed in the most sheltered spot I had at command. It had almost, but not quite, perished during the winter, due as much, I think, to our wet winter as to frost. Another winter I hope to try the effect of glass overhead.

This Nertera is well worthy of some care, as it is most beautiful, with its close carpet of emerald, studded with its bonny, scarlet berries. The flowers are too inconspicuous to be factors in appraising its beauty, but it is a gem indeed.

ORIGANUM HYBRIDUM.

The smaller Marjorams, or Origanums, do not bear the best of reputations for hardiness, and in many places it is impossible to retain O. Dictamnus or O. Tournefortii, and the rarity of their appearance in catalogues is a sign that they are not appreciated, whether because of their want of showiness or lack of hardiness. I have tried several of them but, so far, the only one which has proved its ability to withstand our winter conditions for a series of years has been that called O. hybridum. I have a strong suspicion that the specific name is one coined to cover want of knowledge of the precise species to which it belongs, but I am quite prepared to admit that this doubt may be unwarranted.

Whatever may be the case with respect to the name, the plant so called is a most attractive little subject, owing its attractions, it must be confessed, not to a bright display of flower, but to a singularly pleasing harmony of colouring. It is a choice little plant, eight or nine inches high, with neat leaves, and stems carrying pendent clusters of nodding flowers that owe their charm to the purplish bracts, which make the clusters look like bunches of small, coloured Hops. Its needs are a warm, sunny, sheltered spot and very light and well-drained soil, with plenty of sand and grit mixed with it. Increase is effected by means of cuttings, and its late-flowering is a great advantage. *S. Arnott.*

TREES AND SHRUBS.

FREMONTIA MEXICANA.

The first announcement to appear in our horticultural journals that a second species of Fremontia was in cultivation is probably contained in the communication written by the late H. J. Elwes, and published in *The Gardeners' Chronicle* for July 26, 1919, p. 56. Mr. Elwes, when in California, saw the plant growing in the nursery of Mr. Theodore Payne, Los Angeles, and wrote to the effect that the new species was of great interest and beauty, although it would probably only be hardy in the southern counties.

Fremontia mexicana (Fig. 158) is described by Dr. Anstruther Davidson, C.M., in the July number of the *Bulletin of the Southern Californian Academy of Science* for 1917. We are there informed that it was discovered by Miss K. O. Sessions of San Diego, who raised it from seeds collected near Ensenada. The plant is described as a branching shrub, ten to twenty feet high, branches clothed with dense stellate pubescense, flowers three to four inches in diameter. Contrasted with the better-known F. californica, which has pale yellow flowers, the new species is deep orange and altogether more showy, and as a decorative plant should entirely supplant the older form. The seeds of F. mexicana are smaller than those of F. californica, and are black; it differs also in its manner of growth, for the seedlings grow straight up as a miniature tree, while those of F. californica branch from near the base at an early stage.

In the autumn of 1926, Mr. F. Howard, of Los Angeles, sent me a large quantity of seeds, which were distributed widely. Now that the plant has been tried in several counties it is interesting to hear the varying reports of its behaviour. In some gardens it has failed to survive the winter, while the better known F. californica has proved hardy; in others, both species have come through safely. The older species has been killed in one garden and the newcomer continues to flourish.

It may safely be stated that F. mexicana is no hardier than F. californica, but it does appear to be a much more easily grown plant, flowering when quite young, and it is without question a magnificent early-flowering subject for a cool house, where it produces seeds freely, a more easy method of increase than by cuttings. *T. Hay, Hyde Park.*

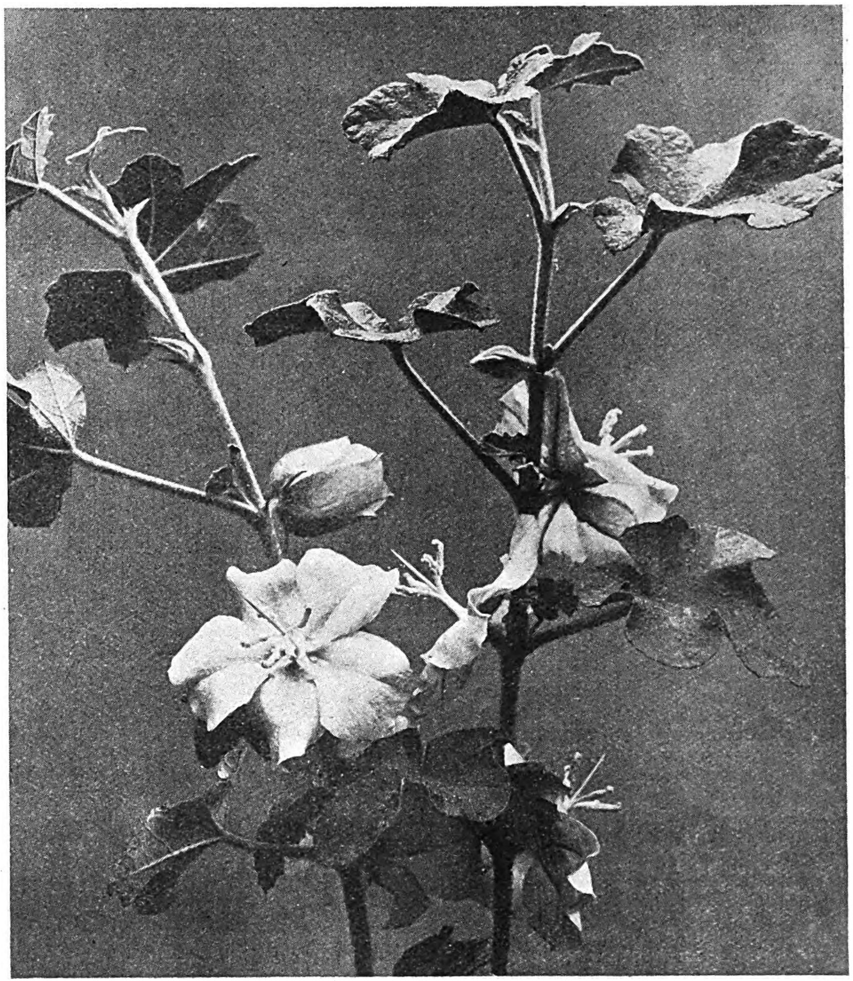


FIG. 158.—FREMONTIA MEXICANA.

MUEHLENBECKIA COMPLEXA.

This shrub may be used for a variety of purposes, for although it has no floral beauty it is a good evergreen, hardy and very free-growing. On the alpine garden it may be used to advantage in covering large boulders, while in other parts of the garden it may be planted against, and allowed to clamber over, tree stumps and similar objects. For clothing retaining walls or planting on hot, sunny banks, few evergreen subjects are more suitable.

It produces close masses of creeping or climbing, wiry growths, which interlace and become an entangled mass; these growths are furnished with small leaves, from the axils of which are borne, during the summer months, insignificant clusters of small, white, wax-like blooms which are decidedly fragrant.

M. complexa belongs to the Natural Order Polygonaceae; it is a native of New Zealand, being found in both of the Islands, from which country it was introduced many years ago. *W.*

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IDEAL GARDENS AND PLANT LORE.

A BEAD AND ROSARY BOSKET.

LET us now select a sunny spot in which to grow a few of the plants which have, during long ages, supplied the devout with rosaries and the lovers of ornament with beads. The latter are known to have been used at least 5,000 years ago, and how much earlier none may tell. Naturally, those which have come down to us are of less perishable material, as a rule, than fruits, seeds and pieces of wood cut to shape; but even so, we know that these latter have been in use for many hundreds of years, both for adorning the person and as aids to devotion. The rosary seems to have originated in India, and was early adopted by the Buddhists in order that they might be able to recite their prayers, invocations or lauds the correct number of times. It was borrowed by the Brahmins and Mahommedans, passed westward into the Greek, Roman and Russian churches, and thus became an established part of the ritual in every land where these various forms of religion have taken root. It is therefore seemly, that we should take our first illustrations from the East, and we begin with a tree whose name is already well-known—the Tulsi, or Tulasi (Ocimum sanctum), usually named the Holy Basil. Although some authorities doubt whether it is indigenous or not, it is always associated with India, and is very commonly cultivated, especially in the gardens of the Brahmins and about the temples. It is herbaceous, erect, softly hairy, with obtuse ovate leaves, small, pale purple corollas and reddish-brown nuts. Reede long ago informed the botanists that it was one of several species of Tolassis, as he wrote it, dedicated to the god Vishnu, and was therefore reputed to be holy. Another species (O. basilicum), or Sweet Basil, with black nuts, is equally well-known, and bears the native name of Ram tulsi. This is

> "The basil tuft, that waves
> Its fragrant blossoms over graves,"

as Moore reminds us in his *Lalla Rookh.* It is called Rayhan in Persia, and is generally found in burial grounds. In Egypt, states an old writer, when the women visit the graves of their friends, they throw upon the tombs a sort of herb which the Arabs call Rihan, and which is our Sweet Basil. No Hindu will cut down the Tulsi on account of its sacred character, and the rosary of a follower of Vishnu is made of the wood of this shrub, consisting of one-hundred-and-eight smooth beads, or of the seeds.

The fact that the beads are smooth is not without its significance, as we shall see if we next take the plant whose fruits are used by the followers of Siva for their rosaries which contain sixteen, thirty-two or sixty-four beads. This is the Rudrâksha Tree (Elaeocarpus Ganitrus), a plant with lanceolate or elliptic leaves, white flowers in drooping racemes, and a round, purple drupe the size of a Cherry. The stone is rough or tubercled, grooved, five-celled, with three spots. They are also used by the Fakirs for necklaces. There are interesting associations with these fruits. They are chosen for their roughness to mark the austerities connected with the worship of Siva, while the five lines marking the cells are said to represent the five faces or five distinct aspects of the god.

Rudrâksha means, in the first place, the eye of Rudra, which is another name for Siva. It is also used in the sense of Rudra's tears, the explanation being as follows. During the ancient war between the demons or Asuras and the gods, Siva gave instructions for the burning of three towns. When he learned, however, that the inhabitants had been burnt, he wept bitterly. From his tears sprang the plant now named Rudrâksha, and the three spots represent the three towns which he destroyed. The number of plants with similar blood and tear associations is unlimited.

Rosaries are sometimes made from the wood of the Sandal Tree (Santalum album) and allied species, as well as from the drupe, which is the size of a large Pea, shining, dark purple, or black. The wood of this tree is held in the highest esteem in the East, not only because it may be used for almost every purpose, but especially on account of its enduring fragrance. It has been suggested that this was the Algum or Almug Tree of the Old Testament, but others are in favour of the Deodar, or a Pterocarpus. Curiously enough, the ancient Hindus disliked the Sandal wood. The root, they said, was infested with serpents, the blossoms with bees, the branches with monkeys and the summit with bears! Others, on the contrary, called it a Tree of Paradise, and on account of its beauty and its perfume, it is often sung by the poets. We are told that when Keshub Chunder Sen, leader of the Brahmo Somaj, died, he was laid out on a new Sandal-wood bedstead, while the same wood was used for the funeral pyre. The dust of the wood is used for making the mark on the forehead which signifies a devotee to Vishnu, and the oil used in religious ceremonies is scented with the same. The Cantonese convert it into incense.

Among the Mahommedans, while rosaries made of the sacred earth of Mecca or Medina are in special request, Date stones are frequently employed, and the Date Palm (Phoenix dactylifera) should therefore find a place in our bosket. Ninety-nine beads form the Tasbih or rosary of the followers of Mahomet, because the names or attributes of the deity reach that number. If, however, the name of Allah be added it makes a hundred. This number is divided into sets by means of a tassel placed between each decad or group of ten.

The Arabs, however, are not by any means limited to the use of Date stones for necklaces or rosaries. There are the Bonduc Trees (Guilandina) for example, the seeds of which are strung as beads by the women, while the boys use them for marbles. These are climbing plants, with hard-wooded, prickly stems and leaves, and belong to the Caesalpinia section of the Legume family. The seeds are about the size of small marbles, and are contained in pods two or three inches in length, flat and prickly. So hard are the seeds that it requires a good heavy stroke of the hammer to break them. The seeds of one species (G. Bonduc) are yellow, while those of the other (G. Bonducella) are grey, sometimes inclining to red, and they are known as Nicker Nuts.

The Bean family (Leguminosae) yields quite a number of seeds which are used for the purposes of personal decoration. Thus we find the members of one genus (Ormosia) specially named the Necklace Trees, from the Greek word *ormos*, a chain, collar or necklace, because the beautiful scarlet seeds with black spots which they produce are often used as beads.

As there are several species, a few words on the better-known forms may not be out of place. There is the Red Bead-tree (O. dasycarpa) which is a native of the West Indies. The seeds are slightly flattened, oblong, the size of a Pea, smooth, polished, and of a red colour with a black spot at one end. Another (O. coccinea) is the Scarlet Bead-tree, and is a native of Guiana and Brazil, while a third (O. coarctata) produces seeds which, while resembling the foregoing in shape and colour, are smaller.

They recall the Crab's Eyes, as the seeds of another slender, twining shrub belonging to this family (Abrus precatorius) are named. The term precatorius is from the Latin verb *precari*, to pray, and was applied to the plant on account of the seeds being used in making prayer-beads or rosaries. Originally a native of the East Indies, it was early introduced into the West Indies, where it soon became naturalised, as it has in other tropical lands. Osbeck tells a very pretty story respecting them. While in Canton, in 1751, he bought some of the seeds in a chandler's shop. They are a sort of little red pease, he states, with a black spot. He adds that "some children seeing me buy them, gathered about me, and desired me to give them some, which I did, and was glad to get rid of them in this manner. I was told that they could buy fruit with them; that they were valued as the lowest coin, and used in weighing gold." This reminds us that it was named Gunja in Sanskrit, and that there is a reference in Hindu literature to the use of the berry as the smallest of the weights employed by Indian jewellers. There is a variety which has white seeds with a black spot.

At one time the rosary or necklace formed of Crab's Eyes was extremely popular, and was to be obtained at all the jewellers, but so many other kinds of beads have been introduced in recent years that these seeds are much less rarely seen. *Hilderic Friend.*

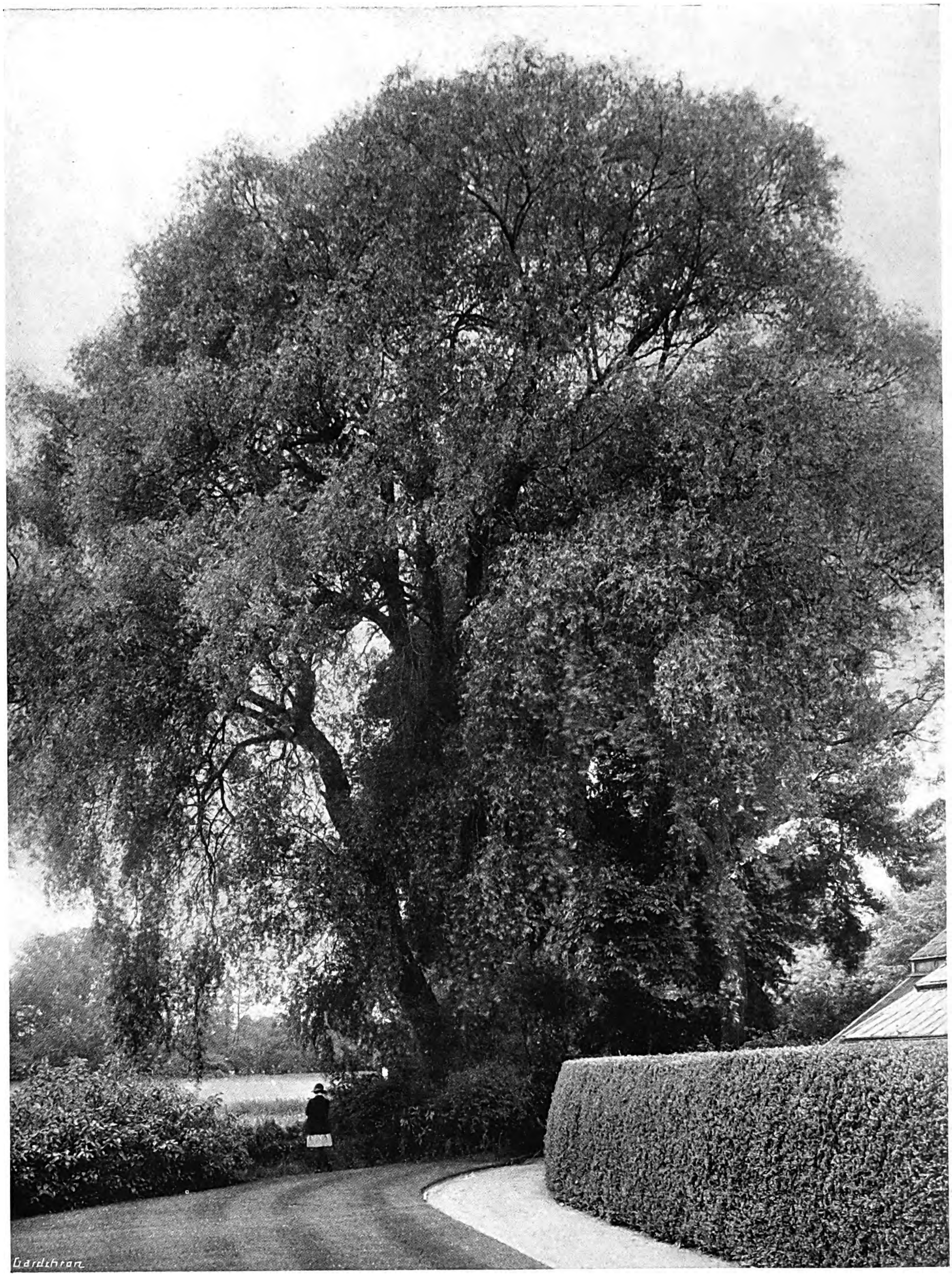
(To be concluded.)

ROADS OF REMEMBRANCE.

WE have been much interested in the two articles on "Roads of Remembrance" which appeared towards the end of last year in *The Gardeners' Chronicle*, by Richard Rigg and J. Comber, for a reason which will appear in due course in this article.

With regard to the article by Richard Rigg, everything must have a commencement, and even the dreams of dreamers have been known to become realities. We agree, however, with Mr. Comber that most of the proposals are impracticable unless one looks forward to the time when the arterial and other roads will revert to the use of pedestrians and our old friend the horse, all other traffic being in the air.

The suggestion to sow seeds of even suitable wild flowers is likely to meet with more opposition from agriculturists, good and bad, than the suggestion to plant trees along the routes. In the former case the resultant crop from wind-blown seeds would be worse than the hypothetical risk of damage by boys in the latter case. Trees planted alongside roads in a proper manner, far from obscuring the view, accentuate it by reducing the glare of the road surface, and by throwing on-coming traffic into focus as it were. When roads are wide enough, as most recently constructed roads are, there is no danger of obstruction of view or destruction of vehicles or trees, even when trees are planted within three feet of the roadsides, provided the trees receive the attention they should receive from rural, communal or governmental departments, as in France, where the double rows of trees along the main routes serve as shady avenues and side-walks for pedestrians. However, our main object in writing, and our interest in the matter, lies in the fact that we have in hand here a scheme which is well past the dream stage, for the planting of an Avenue of Remembrance by individual effort. The road under consideration is partly inside and partly outside the present City boundary of St. John's, and extends to about two-and-a-half miles of the many, many miles constructed by the Roads Commission of



SALIX ALBA IN THE OXFORD BOTANIC GARDEN.

the Government of Newfoundland within recent years, to the advantage of the inhabitants and of the tourists who arrive here in increasing numbers every year from Great Britain, Canada and the United States.

The City of St. John's and its environs is far from lacking in natural beauty. It also possesses one of the best National Memorials of the Great War on this side of the Atlantic, and a beautiful public park in Bowring Park, both of which were dreams at one time, no doubt, but they became realities.

The Avenue of Remembrance here may be said to have had its commencement in a similar dream—the dream of a few citizens visioning the city and its environs the same as many cities in the Maritime Provinces of Canada and the New England States, which may boast no better climate. With the whole-hearted approval and help of the City Council, anyone may have a suitable tree planted, labelled and maintained, at an inclusive figure, in remembrance of a relative, not necessarily one lost in the Great War.

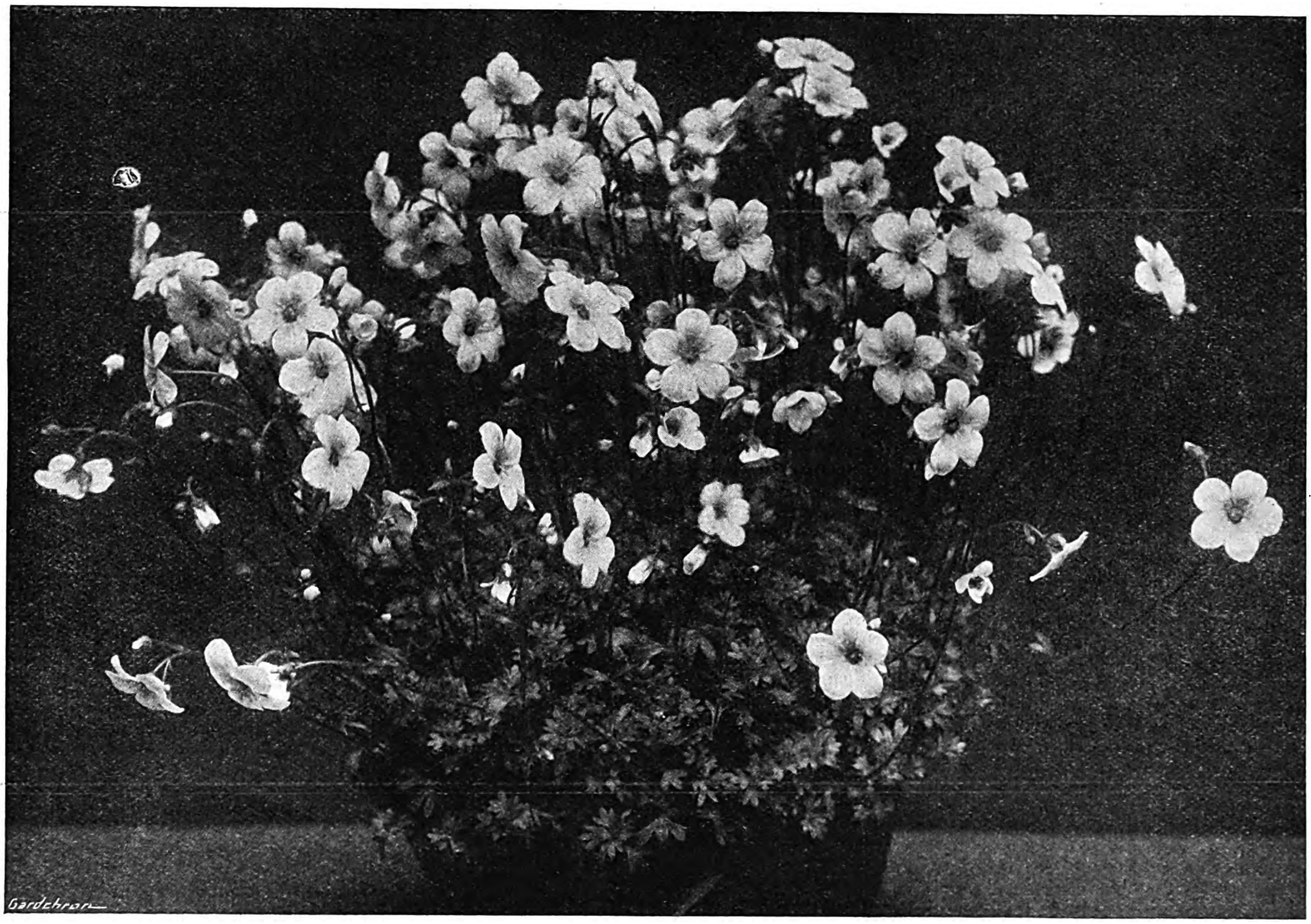


FIG. 159.—SAXIFRAGA JAMES BREMNER.
(see p. 335).

The idea is that, as so many of the public are owners of the trees, a greater incentive is given to protect and maintain the trees and a further incentive is given to future generations to continue the work either individually or collectively. Roadside and street planting schemes are opposed in many ways in Great Britain and elsewhere, but mainly by property owners, rate and tax payers, because of the cost of maintenance, and by surveyors, engineers and road users because of slower drying surfaces. Both oppositions are easily disposed of between public bodies and their surveyors and engineers, the latter being responsible, usually, for maintenance. To sum up, the fact remains that tree-lined arterial or other roads are no more productive of accidents than others, if road sense prevails.

Nature herself is the great landscape architect, yet she rarely combines ornament and utility, even in the case of the best made arterial roads, when left to herself. A subject of so much importance to the present and future generations is worth the attention of everyone, and no harm can be done by pursuing a subject not confined merely to the planting of Roads of Remembrance. *The Valley Nurseries, Ltd., St. John's, Newfoundland.*

ST. FAGAN'S CASTLE.

ST. FAGAN'S CASTLE is the ancestral home of the Right Honourable the Earl of Plymouth. It is situated not very far from the city of Cardiff, but the surroundings are truly rural, and as beautiful as the eye need wish to behold. Seated upon an eminence, the castle overlooks the village in which there are many thatched cottages that the Earl is zealous to preserve.

The gardens are in charge of a man who bears an honoured name in horticulture, Mr. Hugh A. Pettigrew, who has served the family for more than thirty years, and although the gardens do not reveal quite the beauty of pre-war days, they still contain many lovely features, and he who lingers an hour or two in them will leave with a sense of sympathy with the poet who said, "A garden is a lovesome thing." I should like, in a few lines, to describe a few of the leading features with as much accuracy as the memory of a recent visit may give.

The first feature that attracted my attention was the paved garden which was constructed by Mr. Pettigrew about twenty years ago. It contains a number of walks which have been laid with crazy paving, and a number which are clothed with Thymus Serpyllum, which, when pressed with the foot, gives off a delightful odour. A number of beds in the paved garden are filled with choice alpines, and the whole is enclosed by a well-kept hedge of Thuya Lobbii.

The Dutch garden lies in close proximity, and in it are some splendid examples of topiary work. The beds are arranged in the form of a square, and this year are to be filled with Antirrhinums in separate colours; they should furnish a bright and pleasing display.

A charming old-world feature at St. Fagan's Castle is the Mulberry Garden, and some of the specimens are hoary with age, many of the branches having to be supported. At one end of the garden is a blue border which is furnished with Delphiniums, Aconitums, Campanulas, Clematises, Ceanothuses, and in summer time, appropriate blue-flowered annuals.

The terrace at St. Fagan's is in the form of a long, straight walk, adorned by rare and beautiful flowering trees and shrubs, and it overlooks a series of small lakes, while the wild garden, at the time of my visit, was a perfect blaze of Daffodils; this wild garden is as all wild gardens should be, one from which every scintilla of artificiality has been obliterated.

Another uncommon feature is that of the Bath Garden, in which the general arrangement is that of a Roman bath, the margin of the amphitheatre being provided by a series of well-kept Beech hedges.

Mr. Pettigrew is devoting considerable attention to the cultivation of Rambler Roses, and he is arranging them in varieties and growing them on tripods made from rustic poles. Montbretias are also favoured, and a comprehensive collection of these beautiful flowers has just been planted.

The glasshouses at St. Fagan's include a number of vineries in which the leading varieties of Grapes are cultivated, and a range of plant-houses that are utilised mainly for the cultivation of Tomatos and the propagation of bedding plants. Needless to say, arboriculture is afforded a prominent place, and the visitor to the Castle is introduced to it by a fine avenue of Cedrus atlantica, which leads to the front door from the entrance gates. Almost every species of forest tree that is hardy in the British Isles may be seen in and around the gardens of this well-kept ancestral home, and my hope is that their glories may become greater with the passing of the years. *Geo. H. Copley.*

POISONOUS PLANTS.

A QUESTION of great importance to gardeners and others connected with public parks and gardens, and those gardens to which the members of the public have access at certain periods of the year, is that of whether or not there is any obligation to fence in and protect plants and shrubs of a poisonous nature, and if there is such an obligation, what liabilities may be incurred if this is not done and someone is poisoned through meddling with the unprotected plant.

There was a case on this subject before the Court of Appeal some six years ago, and the facts of this case were as follows. In the Glasgow Botanic Gardens belonging to the Corporation of that city, a shrub, Atropa Belladonna, was grown in a small piece of ground which was fenced in. There was, however, no isolation of the shrub, nor was any notice-board put up to warn people that it was of a poisonous nature. This garden, and especially near the piece of ground where the shrub was growing, was much frequented by small boys, and it was alleged that it was extremely probable, if not certain, that they would be tempted and deceived by the appearance of the shrub and would eat the berries. This was, in fact, what happened, and a small boy, the son of the plaintiff in the action, ate some of the berries, and as a result, died. It should be mentioned, too, that although the piece of ground in question was fenced in, it could easily be got into through a gate which could be opened by a small boy.

In his judgment, Lord Buckmaster said that the important facts to be borne in mind were, (1), children were allowed to go to the spot where the shrub was; (2), there was no warning of its dangerous character, and (3), it was known to be dangerous by the owners.

He then quoted a passage from Lord Sumner where he said that the presence in a frequented place of some object of attraction, tempting a child to meddle where he ought to abstain, may well constitute a trap, and in the case of a child too young to be capable of contributory negligence, it may impose full liability on the owner or occupier if he ought, as a reasonable man, to have anticipated the presence of the child and the attractiveness and peril of the object.

In the same case, Lord Atkinson, in a lengthy judgment, said that the liability of defendants in actions of this kind rests, in the last resort, upon their knowledge that by their action they may bring children of tender years, unable to take care of themselves, yet inquisitive and easily tempted, into contact, in a place in which children have a right to be, with things alluring and tempting to them, and possibly in appearance harmless, but which, unknown to them and well-known to the defendants, are harmful and dangerous if meddled with.

The answer to the original question may, it seems, be summed up by saying that if a poisonous shrub or plant is grown in a garden to which the public, and especially children, have access, reasonable steps should be taken to prevent them injuring themselves, or the owner may have to pay compensation for any injury which occurs. *Harold Sharman.*

THE GENUS PRIMULA.

(*Continued from p.* 318.)

BARBICALYX (Wright). Bearded-calyx P. (Sinenses.)

A SMALL and delicate plant. Leaves one to one-and-a-half inch long, oval, sinuous on their margins, toothed, thin, on distinct, rounded stalks three-quarters to one-and-a-quarter inch long; blade and stalk covered with rather long hairs. Flower stems one-and-a-quarter inch to three inches long, slender, hairy, bearing a loose umbel of two to eight erect, pale lilac or pale purple flowers on slender, hairy stalks, three-quarters to one inch long. Corolla over three-quarters-of-an-inch across, divided into five broadly oval, bifid segments; tube cylindrical, slightly swollen towards the mouth, five-eighths-of-an-inch long.

This small perennial plant is considered to be a microform of the variable P. obconica and to form one of the numerous links between that species and P. Listeri. It may be distinguished from other microforms by the long, brownish-purple hairs which cover the calyx. It is found on limestone rocks in vegetable debris in shady spots near Szemao and Mengtze, in southern Yunnan, reaching an elevation of 7,000 feet, and is probably only fit for greenhouse culture under the same conditions as P. obconica.

BARYBOTRYS (Hand-Mazz.) Grape-flowered P. (Sinensis-Malvacea).

A hairy perennial with a short root-stock and broadly heart-shaped, oval, blunt, thin leaves, one-and-a-half inch to three-and-a-half inches long, on slender, hairy stalks, equalling the blades in length; margins broadly lobed, lobes coarsely toothed. Flower stems rather slender, hairy, bearing few or many deep rose coloured blossoms, two to four together in regular dense whorls, or in dense, irregular racemes. Corolla nearly three-quarters-of-an-inch across, divided into five egg-shaped lobes, bifid for about one-third of their length; tube about three-eighths-of-an-inch long, cylindric below, swollen above and constricted at the mouth with a distinct ring. Flowers in July and August.

Flowers in damp, shady places on mountain slopes in Szechuan and Yunnan, at 5,000 to 7,000 feet above sea-level.

Culture: As for P. austrolisteri.

BATHANGENSIS (Petitm.). Bathang valley P. (Malvacea.)

A robust, deciduous perennial with a spreading tuft of kidney-shaped, minutely-toothed leaves, heart-shaped at the base, with blades about two-and-a-half inches long and three inches wide, borne on slender stalks four to eight inches long. Flower stem ten to eighteen inches tall, downy, bearing numerous orange-coloured flowers placed alternately, or in semi-whorls, or in a loose raceme. Corolla five-eighths to three-quarters-of-an-inch across, with a tube about the same length; lobes broadly heart-shaped, notched.

Flowers from July to September. Found in fairly dry, rocky soil on hillsides and the margins of mountain thickets in north-western Yunnan and south-eastern Tibet.

Culture: Sandy, fibrous loam, with limestone chippings, in a half shady spot, is indicated.

BAUMGARTENIANA (Degen.) Baumgarten's P. (Euauricula.)

A tiny Transylvanian perennial plant, allied to and closely resembling P. Clusiana. Leaves in a rosette, spathulate ovate, half-an-inch to one inch long, blunt, rather leathery, smooth; margins cartilaginous with small, scaly teeth. Flower stem, solitary, one to two inches tall, scaly, bearing a solitary lilac-rose, lilac or rarely white, broadly funnel-shaped blossom about one inch across, with rounded, deeply-notched lobes.

This beautiful little plant grows in the clefts of moist rocks, etc., on the top of Keresztenyhavas in Transylvania, at 6,000 to 7,000 feet above sea-level.

Culture: Plant in a cleft in a damp limestone rock packed with peat, in half shade.

BAYERNII (Rupr.). Bayerni's P. (Nivales.)

This perennial plant is considered to be a microform of P. nivalis. Leaves oblong-elliptic or lance-shaped, coarsely or finely toothed on the margins where the membrane is thickened, more or less densely mealy. Flower stem four to six inches tall, bearing an umbel of white flowers on stalks three-quarters to one-and-a-quarter-inch long. Corolla about three-quarters-of-an-inch across, with oval lobes.

Grows in damp meadows in the Caucasus at 6,000 to 10,500 feet above sea-level.

Culture: Fibrous loam and peat in a moist, half shady spot; quite hardy. *A. W. Darnell.*

(*To be continued*).

MESEMBRYANTHEMUM.

(*Continued from p.* 266.)

13.—DACTYLOPSIS, N. E. BR.

DWARF succulent perennial, forming clumps, very pulpy. Leaves two or three to each growth, alternate, terete, very stout, with large, tubular sheaths clasping one another closely and concealing the short stem, soft and pulpy, dotless, withering completely and disappearing when at rest. Flowers terminal, solitary, sessile. Calyx produced above its union with the ovary into a short tube, equally 5-lobed above. Petals numerous, in several series, the inner (staminodes ?) concealing the stamens, linear, stiff, united into a tube at the base and arising in the angle where the calyx unites with the ovary. Stamens numerous, erect, in 4 series, arising from the tube of the corolla and not exserted from it. Stigmas 5, subulate, acute; style none. Ovary half-superior, 5-celled; placentas axile; ovules numerous in each cell. Capsule half-superior, sub-globose, with the 5 sutures raised into grooved ridges on the top, 5-celled; valves deltoid, with the expanding-keels contiguous at the lower part and these forming the cell-partitions, more or less diverging at the apical part, and there bearing broad, membranous, marginal wings or flaps that are united in pairs between each pair of valves; cells open, without cell-wings or tubercles; the central axis ends in 5 short, hard rays arranged in a small star; these rays may possibly be abbreviated cell partitions, as each ray arises from between the bases of a pair of expanding-keels, and occur in other genera. Seeds very small, many of them in each cell, compressed, ellipsoid, somewhat pointed at each end, and with a minute nipple at one end, smooth.—N. E. Br. in *The Gardeners' Chronicle*, 1925, Vol. LXXVIII. p. 413; and in Phillips' *Gen. of S. Afr., Fl. Pl.*, p. 244.

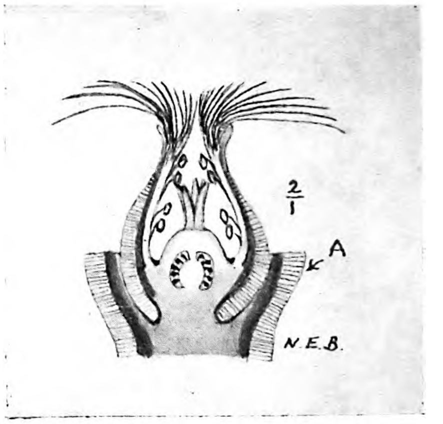


FIG. 160.—DACTYLOPSIS DIGITATA, N. E. BR.

Longitudinal section of flower, with the upper part of the embracing leaf or bract (A) cut away. The darker, shaded parts are green with dense chlorophyll-containing cells, and the large clear cells at right angles to the surface are colourless and transparent.

Species 1, D. digitata, N. E. Br., a native of South Africa.

The name is derived from the Greek, *dactylos*, a finger, and *opsis*, appearance or likeness, in allusion to the finger-like leaves of the plant.

The very remarkable plant that constitutes this genus is distinguished from all others of the group, not only by its appearance, but by its very stout and very pulpy alternate leaves, which are absent or completely withered when the plant is at rest; by its petals being remarkably stiff and united at the base into a tube, and by the character of its ovary and fruit. Fig. 160 represents diagramatically the floral structure made from a living flower. Fig. 161 is from a photograph of my plant in a state of rest, with a dead flower upon one of the growths, natural size, taken by my daughter. In this state it somewhat resembles the pseudo-bulbs of an Orchid. Fig. 162 is from a photograph by Mr. T. N. Leslie of the plant as it grows in South Africa (and with myself) in flower, natural size.

It is interesting to note how completely this plant changes its appearance, as is shown by these figures. When in vigorous growth and flowering its appearance is as shown in Fig. 162, but when it goes to rest the stout pulpy leaves and their sheaths dry up and disappear, becoming a mere brown skin enclosing the short pulpy stem of each growth, as shown in Fig. 161.

1.—D. digitata, N. E. Br. (Figs. 160, 161 and 162).—Plant, with age, forming large clumps up to a foot in diameter. Rootstock and its fleshy roots descending deeply, stout, divided or branching above, the branches being mostly underground, and 6–8 lines thick. Each growth, 1½–3 inches high and ¾–1½ inch thick, soft and fleshy, with 2–3 alternate sheathing leaves that are very unequal, ½–3 inches long, and 4–10 lines thick, terete or finger-like, very obtuse, smooth, glabrous, very pulpy, green or glaucous-green, and under continued sunshine tinged with purple at the tips. Flowers solitary, sessile, terminal. Calyx not exserted, from the leaf-sheath, about 4–4½ lines in diameter, sub-globose at the lower part, green; tube above its union with the ovary 1¼–2 lines long; lobes 2–2½ lines long and 1–2 lines broad, ovate or rounded, obtuse, sub-membranous. Corolla 7–9 lines in diameter, remaining continually expanded for 3–4 weeks irrespective of cloud or sunshine; tube about 3 lines long; petals very numerous, in several series, linear-filiform, rather stiff; the outer about 3–4 lines long, recurved-spreading, pure white; the inner about 1–1½ line long, erect or incurved, concealing the stamens, white or pale yellowish. Stamens in 4 series, included in the corolla-tube, creamy-white. Ovary half or rather more than half-superior, conical above, creamy-white. Stigmas 5, erect, 1–1½ line long, stoutly subulate, acute, creamy-white. Capsule sub-globose, with 5 gaping, sutural ridges on the top, 2½–4 lines in diameter when closed, and 5–6 lines in diameter when expanded, with the whole inner surface creamy-white or pale ochreous. Seeds ½–⅔ line long, light brown.

Mesembryanthemum digitatum, Ait. *Hort. Kew*, ed. 1, Vol. II, p. 181 (1789); Haw. *Obs.* p. 139 (1795), *Misc. Nat.*, p. 27, *Synops. Pl. Succ.*, p. 211, and *Rev. Pl. Succ.*, p. 86; Berger, *Mes. und Port.*, p. 229, f. 47 (copied from a drawing by Masson). M. digitiforme, Thunb. in *Acad. Leop.-Car. Ephem.*, Vol. VIII, *Append.*, p. 6 (1791), and *Fl. Cap.* ed. Schultes, p. 412; Marloth, *Fl. S. Afr.*, Vol. I., p. 201, t. 49, Fig. G., and in *Trans. Roy. Soc. S. Afr.*, Vol. I, p. 407; Pole Evans, *Flowering Pl. of S. Afr.*, Vol. III, t. 102 (section of flower very inaccurate); N. E. Br. in *Bothalia*, Vol. I., p. 153.

Van. Rhynsdorp Division: Karoo between the Olifants River and the Bokkeveld Mountains, Thunberg! Masson! Pearson 5,453! Mrs. Rood! Marloth!

This singular plant was introduced into Kew Gardens by Francis Masson in 1775, but seems soon to have died out of cultivation, for Haworth stated that he never saw the plant. Apparently nothing has been known of it in Europe for over 130 years. Therefore only those who are really fond of plants may sense or understand the delight and gratification I felt upon receiving unexpectedly from Mrs. E. Rood a living specimen of this very remarkable plant, of which I had read and have seen a drawing, but never hoped to possess. Only they may realise the very great disappointment it was to me to find that the bulk of the plant, although preserving its shape, was a mass of rotten pulp! However, as I noticed that two of the growths had firm central cores, I held the plant under a running water-tap, and with a soft brush cleared the whole of the rotten part away, dried the remainder of the plant with a soft cloth, and then placed it in a corner of the warm tiled hearth in front of the dining-room fire and kept it there for three days! Finding the cores were then dry and firm, I planted it in dry sand in a small pot, and placed that pot half-buried in a larger pot of earth. The earth in the outer pot was watered from time to time, but I never watered the sand in which the plant was actually planted. The moisture from the outer pot supplied all that the plant needed, and in a month it had put forth roots, when I repotted it in a different soil, and in due course it developed leaves and flowered. From this plant I have therefore been able to give particulars of the structure of its flower and fruits. Alas, that plant only lived to flower once, the damp atmosphere of a sunless, cold and wet year proved to be fatal to it!

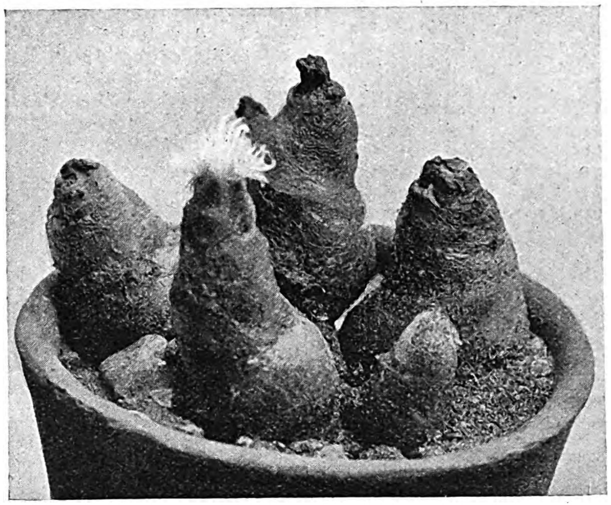


FIG. 161.—DACTYLOPSIS DIGITATA, N. E. BR.
At rest.

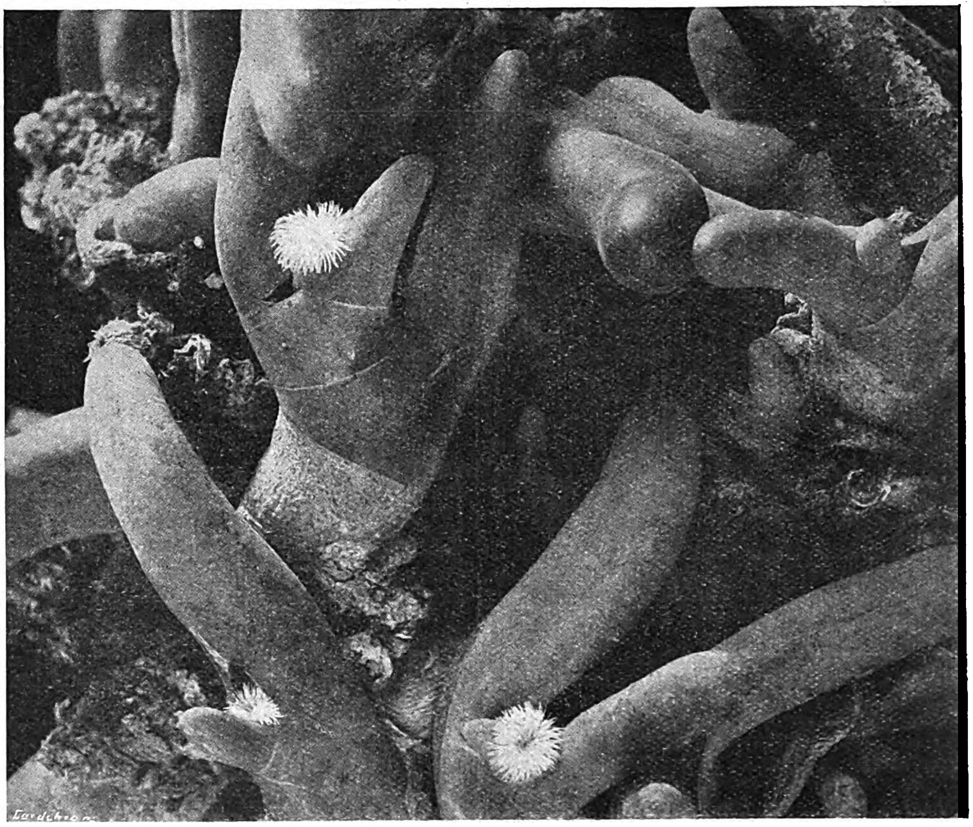


FIG. 162.—DACTYLOPSIS DIGITATA, N. E. BR.
Natural size; photographed at Vereeninging by Mr. T. N. Leslie, Christmas, 1923.

At the British Museum and at Kew there are fine drawings (both alike) made by Masson of the plant as he found it growing in South Africa. These drawings represent a clump of the plant thirteen inches in diameter, of which a small portion has been copied and reproduced on a reduced scale by Berger, as above quoted. Masson's drawing has been thought to be an exaggerated representation of the plant, but my plant and one of which I have a photograph taken in South Africa has had leaves as long and as thick as those represented by Masson, so probably the plant he portrayed had received a larger amount of rainfall that year than usual, thus inducing a luxuriant growth. Masson figures the flowers of normal size.

This plant is remarkable in several of its characteristics. In the first place, when the plant goes to rest, the leaves and their thick pulpy sheaths wither and shrivel to a mere skin, soft and friable, and brown in colour, through which, after a period of rest, the new growths burst. The distinctly stiff petals and the long duration of the flowers (3–4 weeks) so far as known to me, are almost unique in this group of plants, only one other genus (Sterropetalum), having these characters.

Another interesting feature is its peculiar anatomical structure. Each growth consists of a short, stout stem, 1–2 inches long, enveloped by the thick sheaths of the leaves. The central part consists of a stout cylinder of dense, fleshy tissue composed of minute cells, and is somewhat firmer than the other parts of the plant. This cylinder is surrounded by a single layer of large elongated cells, colourless and watery, all arranged at right angles to the axis, and all so large as to be clearly visible to the naked eye, a type of structure I have not seen before. This layer of large, colourless cells is represented at A in Fig. 160. The whole of this is enclosed in the tubular sheaths of the leaves so as to be invisible without dissection. A transverse section of the leaf is quite circular in outline, the central part of it consists of a mass of clear, watery tissue, with air cavities and slender vascular fibres scattered throughout it. At the outer edge of this clear tissue, where it unites with the chlorophyll (or green) tissue, the vascular fibres fork and unite with other fibres, so as to form a network. The chlorophyll tissue forms an outer layer several cells in depth, but the cells are irregularly intermingled, not disposed in regular layers. The epidermis is smooth, becoming slightly glaucous, but under a microscope the outer surface of each cell is convex. *N. E. Brown.*

(*To be continued*).

APIARY NOTES.

THE faculty of hope is sometimes said to be man's evidence for immortality, and bee-keepers have had much of this kind of evidence to sustain them during recent years. It is now clear that, except in Scotland and Ireland, last season was about the worst on record; and after a desperately long winter, only those stocks that were heavily fed in the autumn have survived, but several county councils are starting re-stocking schemes.

Well, when the bees are all dead, then comes the time for a fresh start, a really fresh start, for too many of us muddle along with any sort of equipment, and although bees may build their comb in a soap box and fill it with honey, the pleasure of keeping bees, and, in some degree, the profit, depends on having up-to-date appliances. Hives especially should be of one pattern, and interchangeable. They should be designed as a home for bees, and not as mere garden ornaments, for every bee is a utilitarian, and aesthetic frills do not interest her. She wants a dry, warm house, and the shape of the roof, the provision of a porch, the colour of the paint, and even the size of the door-step are of little or no consequence. Since complications always accompany frills, the wise bee-keeper eschews them, and provides a well-made plain hive, of which every part may fit every other hive in the apiary.

After seeing the hives used in nearly every country under the sun, I really think the hive evolved by S. M. W. Hardwicke, Esq., of Friarmayne, near Dorchester, is about the best obtainable. His sole purpose has been to invent a hive at a low cost, and he has certainly been successful.

Whether one is going to secure new materials or not, now is the time to make sure that all equipment is serviceable and adequate. We hope for a crop this year, and it would be a thousand pities not to be ready, for it is no good racing around for sections when the honey is coming in with a rush, or sitting up at nights to get frames wired for the swarm that may be coming off to-morrow. It is far better to overhaul the hives and crates now, order foundations and frames, and get all in readiness; hurried work is generally bad work.

As for the stocks themselves, it is wise to take advantage of the first warm day to look through them. Make sure that all have good stores, and feed if they have not—syrup, not candy. Examine the brood in the hives and make sure the queen is not a drone layer, and that she is laying regularly; above all, be on the watch for any signs of brood disease. If the queen should be a drone-layer she should be destroyed and a new one obtained at once, and if she is laying irregularly it is a sign that she is failing and should be replaced. There is no time to lose now if stocks are to be ready for the harvest. Everything depends on building up a really strong colony within the next two months, so do not tolerate a failing queen, or wait in the hope that she will improve. "Do it now" is a praiseworthy motto for bee-keepers.

Queens cannot live for ever, and they vary tremendously in their lasting qualities. Some may go on doing well for three, or even four years, but many become exhausted in two, and some in one season. The reasons for this we do not need to explore at the moment. It is poor economy to begrudge ten shillings for a really good young queen, and, in doing so, sacrifice a crop that may realise pounds.

The same applies in the matter of food. Queens will not lay freely if the stores are short. Perhaps the bees were fed in the autumn. Well and good; but how much of that food is left? They should have lots of it, "right now," as the Americans say, and unless they have it now the brood will be weak and insufficient to gather a crop. Remember that it takes six weeks from the egg stage for a bee to become a honey-gatherer, and therefore all the eggs should be layed six weeks before the honey crop commences. *John Mavie.*

LATH BLINDS FOR GREENHOUSES.

THOSE who would garden successfully must protect their plants, and the protection given should be worked easily, so that in the early mornings and late evenings all the essential light is available. At times when gloom settles down and the sun is not seen for days, all possible light is needed.

Inside blinds are a poor remedy, even when of the best make; the blinds and fittings are always liable to damage the plants.

Blinds made of linen or cotton fabric, either with spring rollers in boxes, or on parbuckle rollers to tumble down the roof, answer to some extent; the former are expensive, the latter are nearly always troublesome in working and do not improve the gardener's temper, and also have poor wearing qualities. The older generation of gardeners may remember that years ago the most excellent greenhouse blind, the chain-lath blind, was imported to England from France, and is one of the many excellent ideas in horticulture that our French friends have taught us. It consists of wooden laths linked together with metal chains, the blind being fixed at the top and rolling down the roof on the parbuckle principle.

There are few glass structures in horticulture to which these blinds cannot be fitted with advantage. For some years now they have been made in England by several firms. In this, as in all other matters, there are varying qualities on the market. To secure the best, it is necessary to see that the laths are sufficiently substantial and the correct distance apart, neither too near or too far; there is an ideal space between the laths. Rigidity is another feature that should be kept well in mind when deciding which maker's goods to adopt. One manufacturer has recently patented a chain for these blinds which is not only absolutely unbreakable but also secures perfect rigidity, which, in turn, means easier working.

Further, these blinds are all-the-year-round friends, and are almost as useful in the winter as in the summer. In summer the gardener needs to keep out brilliant sunshine, in winter he wants to conserve all the fire-heat. Such blinds let down on a cold night will assist in this respect in a way that will surprise everyone who has not had experience of them; certain gardeners have stated that these blinds make a difference of 6° to 8° on a cold night.

For covering frames, pits and such structures, the lath blinds are invaluable, and may save many a vexatious loss of plants and many a gardener's spirits when the climate is uncertain.

The life of these blinds may be prolonged indefinitely if they are given a coat of paint at reasonable intervals.

A NEW INTENSIVE SYSTEM OF COMMERCIAL APPLE GROWING.

INTENSIVE methods of crop production have always been sought after by the grower with a limited amount of land. To the owner of hundreds of acres it is comparatively easy to increase cropping by putting more land under the plough. The small owner has no such remedy, and he can only obtain his increase by employing intensive methods. In the case of the vegetable grower, this has already been done in such districts as the Evesham and Bedfordshire areas, and a degree of skill has been attained which makes improvement difficult. When one turns to the fruit-grower, however, there would appear still to be much room for further progress.

In the case of our chief home-grown fruit, the Apple, there are, broadly speaking, two methods of production. One is to plant standard trees on a strong stock, generally in grass, and the other to plant bush trees on a dwarfing stock, usually in arable land. Now the first method is frankly an extensive one, its great advantage being that not much money is spent on production. It takes, however, a long time, and the cropping is very largely dependent on uncontrollable natural forces. The trees are difficult to spray and are liable to produce most of their fruits in glut years, but they score in that their greater height admits of a larger bearing surface. The bush tree is altogether more handy, both in spraying and picking; the quality produced is usually better, although the total bearing capacity per acre, allowing for the greater number of individuals per acre, is probably rather less. Quantity, however, is not everything; quality counts more and more now, and the capacity of producing some fruits in the lean years is of great importance. In this the bush has greater possibilities than the standard.

The bush, however, as grown in this country, varies considerably. With some it hardly differs from a standard, except by its short stem; with others, each limb is treated somewhat like a cordon and becomes in consequence increasingly efficient and intensive. Usually, however, such bushes are grown rather open, too much so in the writer's opinion, and consequently valuable potential bearing space is lost. In addition, bare spaces on the scaffold branches are common, especially in some varieties, and for both these reasons this form is liable to fall short of the highest efficiency in crop production.

The generally recognised intensive forms, such as cordons and espaliers, are commonly found in private gardens, but in this country even the cordon is grown only on a limited scale commercially. The reasons for this are, of course, not far to seek. The large numbers of trees required (up to four thousand per acre), the expensive supporting structure necessary, and the difficulty of keeping the trees from making excessive growth, are reasons sufficient in themselves to have checked the extensive use of this method commercially.

The method of Apple-growing described hereafter has been evolved with the purpose of overcoming these difficulties so far as possible. It is no longer a new system, as it has been in existence on an experimental scale for twelve years, and on a commercial scale for six. At Brockley, Somerset, where the work has been done, there are now eight acres with over 16,000 trees planted. It is, in fact a commercial proposition, although equally applicable to small areas.

The form of tree employed (Fig. 163) is roughly speaking a dwarf pyramid, although it is built up by methods quite different from those usually employed. It requires, therefore, no wiring or staking, or any support whatever, from the time it is planted as a maiden. It consists of a central stem which is not allowed to grow more than eight feet in height, from which radiate upwards of fifty short branches. These branches average about eighteen inches in length, some longer and some shorter, and are borne at any angle from 90° to 45° with the main stem.

Each branch when fully developed is covered with spurs and bare wood is reduced to a minimum.

The trees are planted in straight lines. With a moderate grower, such as Cox's Orange Pippin, they are set at three feet apart from tree to tree, and six feet apart from row to row, thus making 2,400 per acre. The lines should run as nearly as possible north and south. The system has many advantages. Some may be mentioned here :—

(1) Only a small amount of land need be bought to obtain high cropping.
(2) Waste space and bare wood are eliminated.
(3) Spraying is easy and cheap.
(4) Picking is very easy, making the method peculiarly suitable for first-grade dessert fruits,
(5) No expense is incurred in staking or wiring.
(6) The trees begin to bear early.
(7) High manuring, leading to continuous cropping, may be employed as, owing to the ground being full of roots, very little is washed through.
(8) Cultivation is easy and cheap as the trees are in straight lines, forming a sort of hedge.
(9) Overhead charges, such as rent, rates and tithes are small in comparison with the crops produced.

EVOLUTION OF THE SYSTEM.

In *La Taille Lorette*, second edition, Lorette describes many ways of training trees. Some of his forms, such as the espalier, the horizontal and upright cordons, the U and double U are well-known and accepted forms. Others, such as the winged pyramid, are more fanciful and require rather elaborate supporting structures. Of all his forms, however, only one appeared to possess the necessary qualifications for commercial application, and this was the sort of glorified upright cordon which he christened a *fuseau*. This took the form of an upright central stem, with short, radiating branches of about a foot in length.

In 1915, the writer, in his garden, attempted to reproduce this form in the Apple, but the first efforts were attended with failure. Lorette, in his published work, confined himself almost entirely to Pears, and the methods, which in his hands were apparently successful for this fruit, broke down entirely when applied to Apples. The chief difficulty was to obtain the necessary number of side branches, and Lorette's idea of shortening the leaders and strong laterals at the summer pruning failed to stimulate the lower laterals, as well as at the same time spoiling the leader growth. The hard cutting thus employed had the further disadvantage of unduly stimulating the tree in vegetative activity, and so postponing the time of fruiting. Several methods of obtaining side branches were tried, all of which were unsuccessful, until in knife edge ringing a solution of the problem was obtained. This procedure, of which details are given later, enables the grower to produce lateral branches exactly where he pleases, and proved to be one of the fundamental practices for success in this system. *A. H. Lees.*

(*To be continued*).

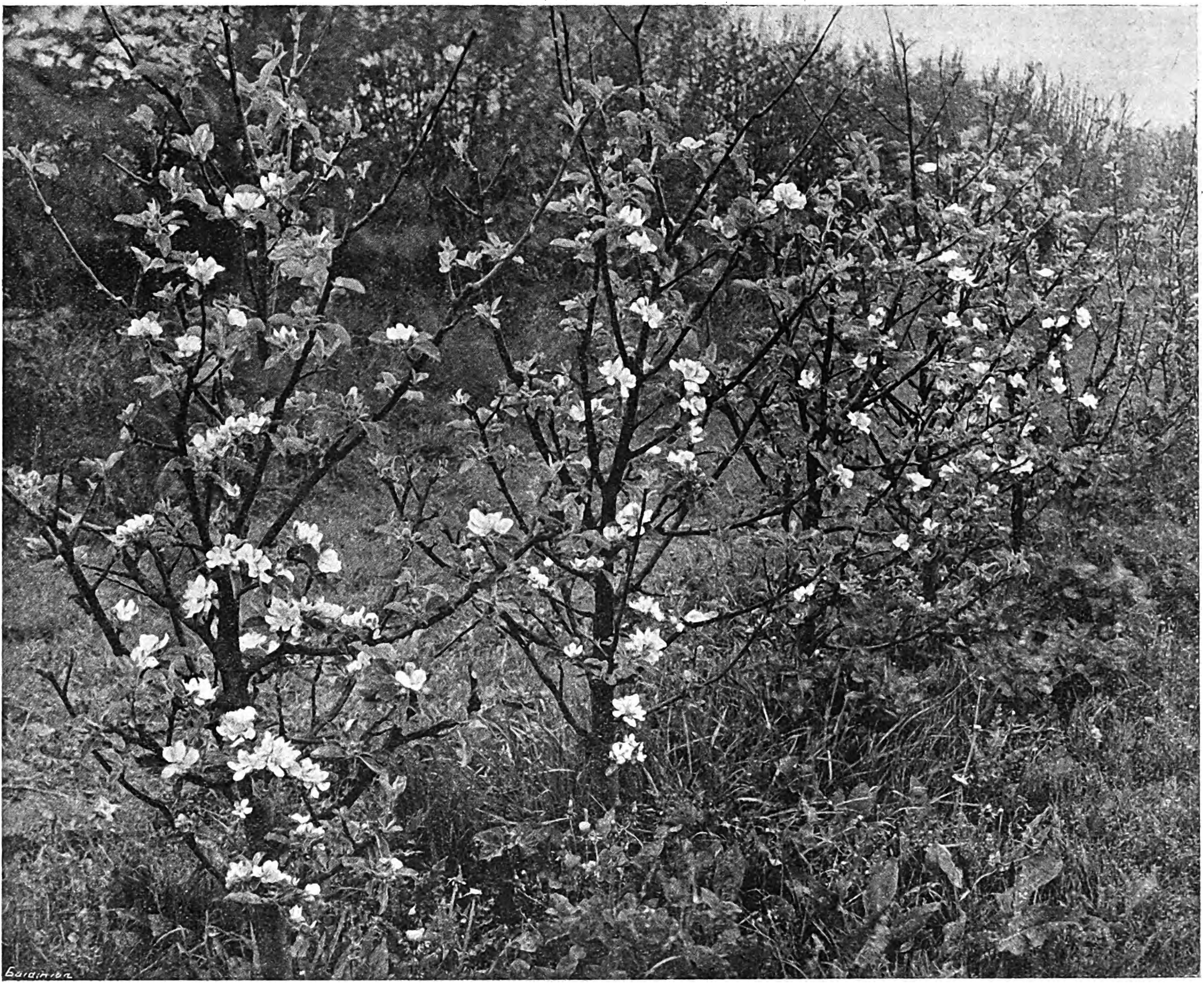


FIG. 163.—DWARF PYRAMID APPLE TREES CULTIVATED UNDER A NEW INTENSIVE SYSTEM

FRUIT GARDEN.

STRAWBERRIES.

WHERE stable litter is to be used for covering the Strawberry beds, the material should be put into position without delay, so that its manurial content may be washed into the soil, leaving a clean surface for the fruits to rest on. If clean straw is preferred, the covering of the beds may be deferred until the first flowers are about to open. Before strawing the beds a final hoeing should be given them, after which a good dusting of soot and lime may be sprinkled over the ground and around, but not on, the plants, as a deterrent to slugs.

Strawberry beds should be netted over before the first flowers open for, in the event of frost occurring, the nets may help to ward off a few degrees. The nets should be fixed at least five feet from the ground so that the fruits may be picked in comfort. Square-meshed nets save valuable time in fixing because they cover any given area exactly, whereas diamond meshed nets cover only two-thirds of the width in the middle, and are a cause of annoyance and delay.

The net should be hung on wires stretched from Larch poles, and laced to wire netting three feet high all around the bed, leaving a convenient entrance for ready access to the fruits. Fixed in this way, so that it does not come in contact with the ground, and, after use, taken down and stored when quite dry, a good net should last about ten years. *T. E. T.*

HOME CORRESPONDENCE.

Raising Plants from Collected Seeds.—The article by Mr. J. Comber, dealing with this subject, in your issue of *The Gardeners' Chronicle* for April 7, would seem to suggest that collected seeds may get into the hands of private persons for raising and trial. I have often longed for an opportunity of "trying out" new seeds, but was under the impression that only highly-placed experts—those of botanical gardens, etc.—would ever stand any chance of securing supplies. If there are such opportunities available, I should appreciate such an opportunity. My own particular hobby is Primula-growing, and if enthusiasm and an "infinite capacity for taking pains" count for anything, the confidence should not be misplaced. *R. J. Gummer, Clonlee, 48, Clifford Road, New Barnet.*

Myosotis alpestris.—I was pleased to see the beautiful figure of this charming and rare alpine plant in your issue of March 31 (p. 223). Forget-me-not! Who could forget it after having seen it in its native habitat, near the summit of Ben Lawers, one of the highest mountains of the Breadalbane Chain, in Perthshire. Here it is to be found in its solitary station, its only habitat in Britain. The Ben Lawers mountain is, perhaps, one of the richest botanical grounds in Britain, and it would be difficult to find a place so rich both in genera and species. One has to climb upward to 3,500 feet before coming into touch with this wonderful collection of alpine plants, on the face of some perpendicular rocks, consisting chiefly of mica-schist, a formation which is always rich in alpine plants. At this elevation a vast number of rare plants may be found, but the most striking of them is Myosotis alpestris, growing in countless thousands on the wet ledges. Gentiana nivalis and Saxifraga cernua may also be found growing abundantly in a sort of crater near the summit, together with Saxifraga rivularis, and a great number of Carexes; grasses and rushes; Polypodium alpestre and Polystichum Lonchitis; Cystoteris montana and a number of other interesting subjects. There is another habitat of M. alpestris, given in Naten's *Cyble Britanicum*, namely, Mickle-fell, in Upper Teesdale, Yorkshire. The form found there is extremely rare; it is a much smaller plant than the Ben Lawers' type and is always found on limestone, in dry positions. It is seldom more than an inch-and-a-half high, whereas the Scotch form grows up to nine inches during the flowering period; both are sweetly scented. I am under the impression that it is known on the Continent as Myosotis rupicola. In 1920, I made the ascent of Little Fell in the Eden Valley drainage area, in Westmoreland, and to my surprise I came upon a colony of the Yorkshire form of Myosotis alpestris, and also some fine patches of Saxifraga Hirculus. *W. H. Stansfield.*

Pruning Fruit Trees.—There has always been a great diversity of opinion as to whether young trees should, or should not, be pruned. The result of my own experience is that it depends on the growth made. It is useless and detrimental to prune a tree that is not growing strongly enough to respond to pruning; it may dwarf the tree permanently. Trees on some soils are incapable of growth until well established, especially if planted in grass. Left to grow as they please until they show signs of vigour and then pruned, the results should be all that may be desired. No intelligent pruner works by fixed rules; he treats each tree and branch according to its individual condition, and prunes at any season of the year when observation shows that it may be advantageous. *W. J. Farmer.*

Anomatheca cruenta.—This is a most pleasing little bulbous subject, peculiarly suitable for a place on the rockery. It should have a warm, sunny site and soil of a sandy nature. Because of the small size of the bulbs they should be planted rather closely together—colonies of a dozen or more not being too many in one place. The salmon-coloured, blotched flowers are not unlike those of the Ixia, and the slender, graceful habit of the plant, too, somewhat resembles the latter plant. Planting should be done now. *O. Turner.*

SOCIETIES.

ROYAL HORTICULTURAL OF IRELAND.

The Spring Show of the Royal Horticultural Society of Ireland, held, by kind permission of the Earl of Iveagh, at Earlsfort Terrace, Dublin, proved an extremely pleasing and attractive function. Daffodils, on three-tiered staging, made a fine display, and alpines were shown in increased numbers. Hardy flowering shrubs were, however, but poorly represented, for they have suffered severely in the Dublin district, as was evident in Lady Moore's graphic description given in *The Gardeners' Chronicle* (p. 250), but with excellent examples of subjects from under glass a possible want was well filled.

For twelve pans, not exceeding nine inches, of alpine plants in flower, distinct, the Challenge Cup presented by Mrs. Butler was won outright by Mrs. ANDREW JAMESON (gr. Mr. J. Cullen), Sutton House, Co. Dublin; Mrs. CROFT (gr. Miss B. Ryan), Brackenstown, Co. Dublin, being placed second. Strong competition in the class for twelve pots or pans, not exceeding four inches, of alpines in or out of flower, rarity to count, resulted in Mrs. BUTLER winning Major Butler's Challenge Cup; and for nine pots or pans, limited to six inches diameter, of alpines, distinct, Mr. J. HARPER-SCAIFE, L.L.B., Dalkey, took first prize. For the best and most effective display of hardy alpines, for Lady Greer's Challenge Cup, Mrs. BUTLER was placed first; Miss WYNNE having the best dozen hardy Primulas, distinct.

There was a good display in the class for six Primula obconica, Mrs. McCABE (gr. Mr. T. McGauley), Trimleston, Co. Dublin, was first; Madame FOTTRELL (gr. Mr. W. Taylor), Sydney Parade, had the best six table plants; and the first prize for Deutzias was won by Mr. C. WISDOM HELY, with huge, superbly-flowered plants of D. Lemoinei. Mignonette was very good, the Hon. GORDON CAMPBELL (gr. Mr. Cook), Clonard, Terenure, showing the best three pots, and Mr. ODLUM secured the first award for six pots of Freesias. Richardias were well displayed by Mr. WISDOM HELY and Madame FOTTRELL, both of whom also showed excellent Spiraeas. Schizanthusses were good, Mr. C. WISDOM HELY, being placed first; Madame FOTTRELL had the best collection of bulbous or tuberous-rooted plants. Pot Tulips were well shown, but Mrs. McCABE was the only exhibitor of Hyacinths.

For Daffodils, Mrs. ALFRED WEST won the Lord Ardilaun Perpetual Cup in the premier class for thirty varieties; Mrs. BUTLER secured the first prize for twelve vases; while in the class restricted to sorts named in the 1916 classification list, Dr. C. W. PARR, Glencarrig, Co. Wicklow, was the only exhibitor, with excellent specimens.

The Challenge Cup for cut flowers of bulbous, tuberous or rhizomatous subjects, was this year won outright by Mrs. ALFRED WEST; and in the class for twenty-four vases of hardy cut flowers, the Challenge Cup was awarded to a very modest collection staged by Mrs. RAYMOND STEPHENSON, Cranford, Dublin. Mr. VAUGHAN HART, Stillorgan, showed good Rhododendrons, and two excellent exhibits of Roses were arranged by Mrs. WEST, and Mr. WISDOM HELY. Hardy Primulas, including Polyanthus varieties, were a feature of the show, both in quality and quantity, but winners names need not be repeated here; the Violets evoked considerable interest.

Fruits and vegetables were more conspicuous by good quality than quantity; fruits were limited to a class for culinary Apples and one for cooking Pears. Miss CUNNINGHAM, Trinity Hall, Dublin, was first for spring Cabbages, and the Hon. K. LAWLESS staged the best Cucumbers, Rhubarb, and six kinds of vegetables. Mrs. McCABE took first prizes for Broccoli, large Cabbages, new Potatos and old Potatos. The Hon. GORDON CAMPBELL showed the best Kale and Seakale; the Hon. A. E. GUINNESS, Glenmaroon, Co. Dublin (gr. Mr. W. Stevens), had the best Onions, and Mr. C. WISDOM HELY excelled with Lettuces and Turnips.

There were rather more special exhibits than is usual, comprising, first and foremost, a fine group from Messrs. WATSON AND SONS, LTD., in which the Cytisuses Lord Lambourne and Dorothy Walpole were conspicuous. Other beautiful Brooms were in evidence, and a good display of Polyantha Roses, among which Orange Queen was a striking feature, and a well-flowered bush of Fremontia californica. A Gold Medal was awarded to Messrs. WATSON AND SONS LTD.; a Silver-gilt Medal going to the Rt. Rev. and Hon. BISHOP PLUNKET for a fine group containing a distinct seedling Laburnum, finely-flowered Lilacs, and plants in good bloom of Veltheimia viridifolia. Messrs. CHARLES RAMSAY AND SON showed greenhouse subjects, including the pure white Azalea Niobe; Mr. G. N. SMITH arranged a collection of purely hardy subjects; and Mr. A. L. SPEIRS constructed an excellent rock garden.

An Award of Merit was given to Sir FREDK. MOORE for two striking seedling Saxifragas, one of which was S. James Bremner (see p. 335); and a First Class Certificate to Trinity College, (Dublin) Botanic Gardens, for a very beautiful seedling Siamese Rhododendron.

ROYAL HORTICULTURAL.

MAY 8 AND 9.—There was again a very full show at the Royal Horticultural Hall, Westminster, on the occasion of the fortnightly meeting of the Society. The attendance was very good, and during the morning Princess Mary, Viscountess Lascelles, visited the show and, escorted by the President, Lord Lambourne, made an interested inspection of all the exhibits. There was no collection of Orchids and only a few novelties. The Orchid Committee recommended the award of one First Class Certificate and an Award of Merit to new varieties. Tulips were shown extensively and in exceedingly good quality. The Narcissus season seems practically over, although there were several novelties submitted, but without any result. The Committee recommended one Award of Merit to a new Tulip. Flowering trees and shrubs of considerable interest, rock gardens and collections of alpines, greenhouse Calceolarias, Roses and Carnations, were expecially well shown. The Floral Committee recommended the award of one First Class Certificate and seven Awards of Merit to novelties. Beyond a Savoy, which was selected for trial at Wisley, and an exhibit of Rhubarb, there was nothing of interest before the Fruit and Vegetable Committee.

Orchid Committee.

Present: Sir Jeremiah Colman, Bt. (in the chair), Mr. S. Flory (Acting Hon. Secretary), Mr. Fred. J. Hanbury, Mr. R. Brooman White, Mr. Wilson Potter, Mr. Lionel de Rothschild, Mr. A. McBean, Mr. H. Alexander, Mr. Fred K. Sander, Mr. J. E. Shill, Mr. Charles H. Curtis, Mr. J. Cowan, Mr. E. R. Ashton, Mr. Stuart H. Low and Mr. R. G. Thwaites.

There were very few Orchids on this occasion, and no groups of these subjects. Baron BRUNO SCHRÖDER (gr. Mr. Shill), Dell Park, Egham, exhibited a beautiful plant of Miltonia Princess Mary (F.C.C., 1927) carrying five spikes, each bearing a pair of large blooms of deep rose-red, rosy-mauve and white colouring. (Cultural Commendation).

Odontonia Windsor, of rich deep colour, was shown by Messrs. BLACK AND FLORY. ROBERT PATERSON, Esq. (gr. Mr. A. Merry), Stonehurst, Ardingly, brought up four fine plants:—Odontoglossum Thydia, Stonehurst var.; Odontioda Brockenhurst, Stonehurst var.; Laelio-Cattleya Hassallii alba, with eight superb blooms (Cultural Commendation); and the brilliant Miltonia Lucia, Paterson's var.

Brasso-Cattleya Paladin (B.-C. Pallas × C. Warscewiczii var. Sanderiana), of beautiful soft mauve colour, with a yellow area on the wide, fringed lip, was shown by Messrs. SANDERS.

FIRST CLASS CERTIFICATE.

Miltonia Lucia, Paterson's variety (*M. vexillaria* × *M. Princess Margarita*).—A handsome Miltonia with large flowers. The sepals are blush, with rosy veins; the petals ruby-red with rosy margins and shadings; and the lip of very fine size, blush white at the margins, with a central rosy area and a red-brown, white edged mask. Shown by **Robert Paterson**, Esq.

Award of Merit.

Odontioda Brockenhurst, Stonehurst var. (*Oda. Charlesworthii* × *Odm. Eximium*).—A good spike of fourteen flowers was shown the blooms are of good size and of rich, deep crimson-brown colour, with pale markings at the tip of the lip, and a gold and brown disk. Shown by **Robert Paterson**, Esq.

Preliminary Certificate.

Odontonia Windsor (*Odm. Trident* × *Miltonia Wm. Pitt*).—A very pretty hybrid represented by a single flower; the colour is deep purplish-rose heavily marked with deep red; the mask is rose, lilac and brown. Shown by Messrs. **Black and Flory**.

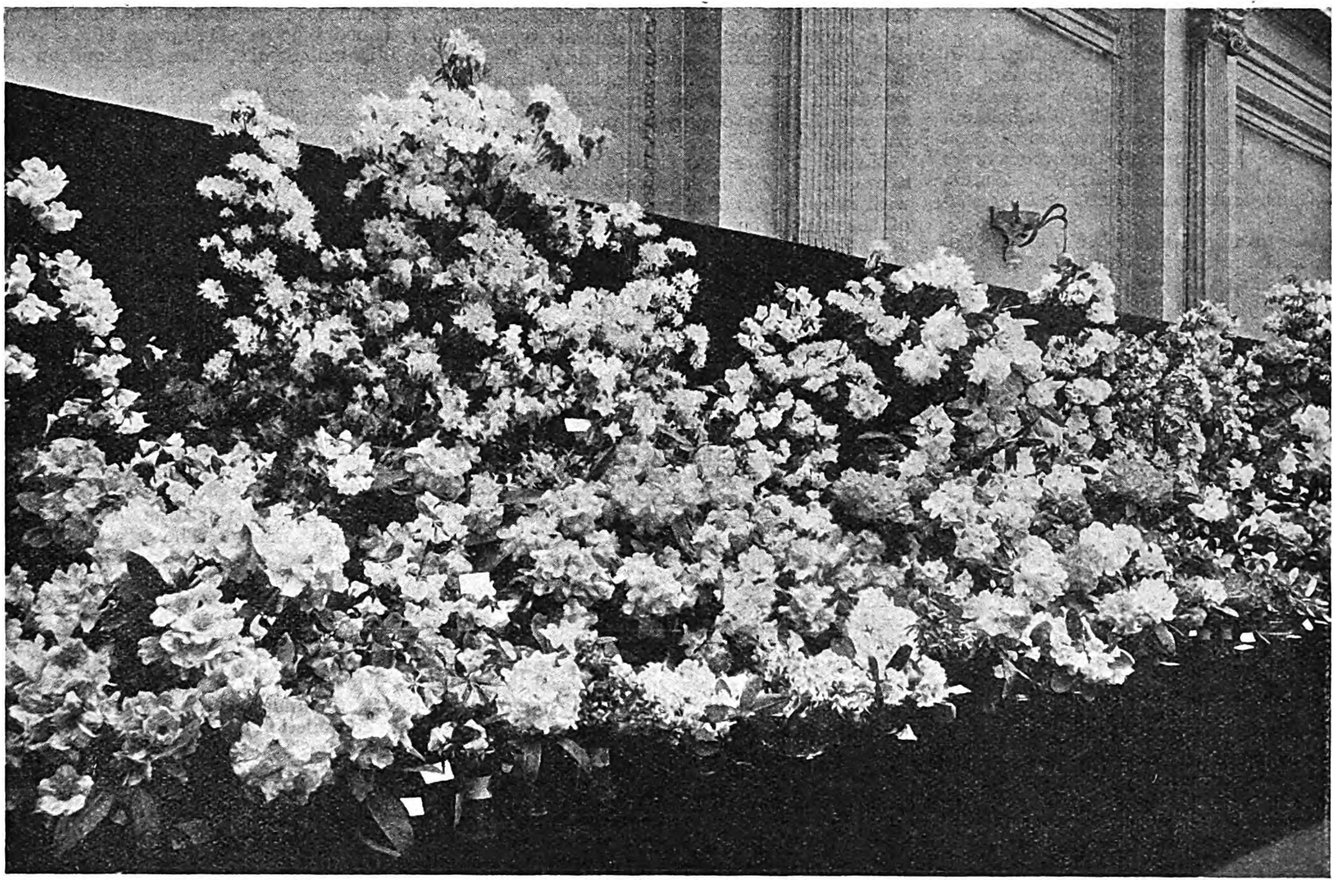


FIG. 164.—GROUP OF RHODODENDRONS EXHIBITED BY LIONEL DE ROTHSCHILD, ESQ. (Gr. MR. A. BEDFORD), EXBURY, AT THE RHODODENDRON ASSOCIATION'S SHOW ON MAY 1.

Awarded the Challenge Cup as the best exhibit in the Amateurs' division (see p. 326).

Floral Committee.

Present: Section A.—Mr. Henry B. May (in the chair), Mr. J. F. McLeod, Mr. Arthur Turner, Mrs. Ethel M. Wightman, Mr. H. J. Jones, Mr. William Howe, Mr. Donald Allan, Mr. J. M. Bridgeford, Mr. D. Ingamells, Mr. M. C. Allwood, Mr. Courtney Page, Mr. A. E. Vasey, Mr. W. B. Gingell, Mr. D. B. Crane, Mrs. Helen Lindsay-Smith, Mr. Charles E. Pearson, Mr. H. R. Darlington, Mr. R. Findlay and Mr. W. D. Cartwright (Secretary).

Section B.—Mr. Gerald W. E. Loder (in the chair), Mr. W. J. Bean, Mr. R. C. Notcutt, Mr. James Hudson, Mr. G. Reuthe, Mr. James Comber, Mr. F. G. Preston, Mr. Reginald Cory, Mr. L. R. Russell, Mr. A. Bedford, Mr. Mark Fenwick, Mr. E. H. Wilding, Lady Beatrix Stanley, Mr. G. Yeld, Mr. C. Williams, Mr. T. Hay, Mr. Charles T. Musgrave, Sir William Lawrence, Bt., Mr. W. B. Cranfield and Mr. N. K. Gould (Secretary).

First Class Certificate.

Carnation Mrs. A. J. Cobb.—This handsome, rich crimson, perpetual-flowering variety, received a R.H.S. Award of Merit on April 5 of last year, and a week previously had been awarded the *Daily Mail* Gold Cup for the second successive year as being the best new fragrant Carnation shown before the British Carnation Society. This splendid variety was illustrated in *The Gardeners' Chronicle* of April 9, 1927. Shown by Mr. A. F. **Dutton**.

Awards of Merit.

Aethionema Warley Ruber.—A very showy little alpine of Aethionema cordifolium type. Several plants were shown and these were of bushy habit, bearing compact heads of deep pink flowers. Shown by Miss **Ellen Willmott**, V.M.H., Great Warley, Essex.

Hydrangea Mrs. A. Simmonds.—This is one of the excellent seedling Hydrangeas of which Mr. H. J. **Jones** has shown so many during the past two years. The variety has a medium-sized compact head of vivid, salmon-rose flowers, with serrated edges. Shown by Mr. H. J. **Jones**.

Ourisia coccinea Pers. (*Comber*, 962).—The illustration in *Bot. Mag.*, t. 5,335, gives a good impression of the grace and beauty of this Chilian perennial, although the flowers are even more showy than suggested by the illustration. The species has long-stemmed, cordate-lanceolate, unequally-lobed, crenate, dark green leaves, which are coloured purple on the under-surfaces. The drooping, tubular, vivid scarlet flowers are borne in pairs in graceful erect racemes, about a foot in height. Shown by Lt.-Col. C. R. **Messel** (gr. Mr. J. Comber), Nymans, Handcross.

Pyrus Lemoinei.—This is an attractive, small tree, both in its deep bronze foliage and deep crimson flowers, which are freely produced. Shown by Mr. R. C. **Notcutt**.

Pyrus Malus theifera.—A vigorous Crab which has pale green leaves and clusters of large, snow-white flowers. Shown by the Hon. **Vicary Gibbs** (gr. Mr. E. Beckett), Aldenham House, Elstree.

Ranunculus cortusaefolius.—A handsome Buttercup from Teneriffe, which is illustrated in *Bot. Mag.*, t. 4,625. The shining, yellow flowers are considerably over two inches in diameter and are borne freely on tall, branching stems. Shown by E. M. **Preston**, Esq., The Warren, Hayes, Kent.

Rhododendron Rosemary Chipp.—The parentage of this new Rhododendron is given as R. obiculare × R. Loderi. It has a large, well-formed truss of pale pink flowers, which have gracefully waved margins. Shown by the **Director**, Royal Gardens, Kew.

Cultural Commendation.

Silene Hookeri.—A particularly well-grown plant of this handsome species, which received an Award of Merit in 1912, was shown by Sir **William Lawrence**, Bt., Burford, Dorking.

For Trial at Wisley.

Iris barbata Sunbeam.—This bright yellow Iris was raised from I. Dejazet and I. Orange Queen. Shown by the **Orpington Nurseries**.

Other Novelties.

Amongst the novelties which did not receive awards there were several of more than passing interest. Mr. **Clarence Elliott** showed a plant of Oxalis gigantea of definite arboreal habit. This uncommon species makes woody, branched stems, furnished at the tops with long-stalked, Clover-like, shining leaves, and bears bright yellow flowers. Mr. Elliott tells us that he found it growing on rugged, barren hillsides in North Chili, and that he saw specimens from six feet to eight feet in height. Lt.-Col. **Messel** showed a small pan of a Calceolaria collected by Mr. H. Comber (No. 720), which is considered to be a natural hybrid between C. Germanini and C. mendocina. It is a small, herbaceous plant which has a lowly tuft of pale green leaves and bears solitary, shining yellow flowers of good size, on stalks six inches or so long. Plants in the open ground at Nymans have passed successfully through the past winter, so that it may be considered to be hardy. This new Calceolaria promises to have distinct value for the front of the herbaceous border and for selected positions in the rock garden.

Groups.

On a large table space, Messrs. Dobbie and Co. staged nearly one hundred plants of the large-flowered Calceolaria. The specimens, which were grown in relatively small pots, illustrated a splendid strain and first-rate cultivation, and many exceedingly beautiful colours and interesting spottings were shown on the flowers. Messrs. Sander set up a goodly collection of Anthurium Scherzerianum varieties. All the plants bore large spathes, which varied in colouring from pale cream to very dark crimson, while others were attractively spotted. Some very good Hippeastrums were associated with Calla Elliotiana, Metrosideros floribunda, Boronia heterophylla and other greenhouse plants by Messrs. Stuart Low and Co.

In an attractively arranged group, Mr. H. J. Jones displayed a splendid selection of Hydrangeas. The most attractive were Parsifal and Marechal Foch, of glowing pink colours, while there were also several varieties of good blue colouring. Collections of Carnations were staged by Messrs. C. Engelmann, Messrs. Allwood Bros. and Messrs. Stuart Low and Co.

In a corner group, Messrs. F. Cant and Co. set out good standard Roses, chiefly of the Polyantha varieties, and also showed a few H.T. sorts. In the body of the hall, Mr. J. H. Pemberton had a group of pot Roses, while under the clock, Messrs. B. R. Cant and Sons staged cut blooms, mostly of golden H.T. varieties.

An interesting collection of hardy trees and shrubs, arranged by Mr. R. C. Notcutt, included well-flowered branches of Prunus Padus grandiflora, many Lilacs, Pyruses and hardy Azaleas. Messrs. L. R. Russell, Ltd., grouped ornamental Vines, Brooms and Azaleas.

There were many good exhibits of rock gardens. Near the entrance, Mr. Clarence Elliott had a very successful exhibit in which he grouped Gentiana verna and other seasonable alpines. Messrs. M. Prichard and Sons used Brooms, Ceanothus rigidus, and Kalmia glauca very effectively. Mr. Gavin Jones planted a miniature valley with a good selection of dwarf Irises. Lithospermum graminifolium, Viola Jackanapes, and many other plants were utilised by Messrs. W. Wood and Son; while Messrs. Bakers planted good batches of Trollius varieties, with various alpines. Good exhibits of rock gardens were also made by Mr. Stephen Sims, Mr. F. G. Wood, the Misses Hopkins, the Merivale Nurseries and the Little Munder Nursery.

In their exhibit, Messrs. Waterer, Sons and Crisp planted Azalea rosaeflora, Iris cristata, Rhododendrons, Brooms, and the double-flowered Gorse. Messrs. Maxwell and Beale also made use of Brooms and other shrubs as a background to a good batch of Incarvillea Delavayi and Primulas. J. P. Morgan, Esq. (gr. Mr. F. A. Steward), Wall Hall, Watford, and A. J. Sewell, Esq. (gr. Mr. A. Kench), Ronneby, Weybridge, also had interesting exhibits of alpines. The latter included a pair of the rare Eritrichium nanum in flower. Messrs. J. Cheal and Sons showed a good collection of hardy flowering shrubs and alpines and forced Dahlias of glowing colours. Mr. J. Robinson had a neat rock garden exhibit. Messrs. W. H. Rogers and Son planted Rhododendrons, Brooms and other shrubs with alpines.

Especially good Polyanthuses were shown by Messrs. John and A. Crook and by Mr. G. W. Miller, who also had an interesting collection of Trollius varieties. Mr. S. J. Goodliffe had early Delphiniums in pots with Rhododendrons, Daphne Cneorum and other shrubs.

A small collection of well-grown Auriculas was staged by Mr. James Douglas. Messrs. Jarman and Co. had many vases of trusses of Zonal Pelargoniums. Messrs. Reamsbottom and Co. showed their strains of Anemones, and Mr. B. Pinney had single Violets. Mrs. Bertie Bell contributed a number of Gerberas of a very desirable type.

Narcissus and Tulip Committee.

Present: Mr. G. Monro (in the chair), Miss E. Willmott, Mr. W. Cuthbertson, Mrs. V. Brodie, Mr. P. R. Barr, Mr. C. H. Curtis, Mr. C. W. Needham, Mr. G. Churcher, Rev. Rollo Meyer, Mr. W. Poupart and Mr. A. Simmonds (Secretary).

Award of Merit.

Tulip Dipper.—This handsome Tulip received an award as a show variety. It has moderately small but well-shaped blooms of firm texture, the petals being deep, glossy, intense, almost blackish, maroon, with white bases in striking contrast. It is a distinct variety and the blooms are carried well on slender, strong stems. Shown by Sir A. D. Hall, Manor House, Merton Park, Surrey.

Groups.

Tulips were much in evidence at this meeting, the recent spell of fine weather being responsible to a large extent for the several magnificent groups of blooms of excellent quality. The walls of the hall were almost completely lined with wonderful banks of flowers, while there were several displays occupying positions in other parts of the building.

Messrs. Dobbie and Co. staged a fine group; a broad, sloping bank, relieved here and there with raised bowls of choice varieties, the beauty of the Tulips being accentuated by the black velvet background, Palms, and Asparagus Fern. Forming huge clusters at the back of the group, among the Darwin Tulips, were the creamy-white Zwanenberg; The Giant, deep rose-purple; Pride of Haarlem, scarlet; La France, and the pink-tinted La Candeur; Dido, a lovely deep rose, well-shaped flower, was also shown well. The most striking of the Cottage Tulips were Mrs. Kerrell, Quaintness, John Ruskin. Inglescombe Pink, Striped Beauty, Orange King, and the rich golden W. T. Ware; among Parrot Tulips there were such quaint, but richly coloured varieties as Markgraaf, Perfecta, Sensation and Cramoisie Brilliant. Other well-staged Darwins in this fine exhibit were The Bishop, Bartigon, Euterpe, Suzon and Bronze Queen.

Another attractive collection was arranged by the Bronwylfa Fruit Farm, the blooms of Zulu, the white Zwanenberg, Jubilee, Louis XIV, and Queen of Roses, being exceptionally fine, while there were also several beautiful Cottage Tulips displayed, the outstanding varieties being Mrs. Moon, a fine golden-yellow; Sunset, Golden Crown, Quaintness and La Merveille; the blooms of the vivid scarlet Gesneriana major were unusually striking.

The Welsh Bulb Fields arranged a magnificent group, tastefully blended and well set-off with Palms and Ferns. Prominent features were made of Eclipse, Ida Scott, extremely beautiful; the large white Carrara; Louise de la Vallière, and Andromaque; Meliath, William Pitt, Faust and Gold Finder, an old but very striking variety, also attracted attention. The front of this collection was occupied by such charming Cottage Tulips as Orange Globe, Sunset, Picotee, Amber and Prince Charming, the last a really beautiful little Tulip with vivid scarlet flowers.

A group of excellent blooms was staged by the Rev. Rollo Meyer, who made a fine feature of the vivid, orange-coloured The President; behind which were beautiful specimens of Frans Hals, Marconi, and the white Zwanenberg. Quaintness and Dom Pedro were also well shown, and other noticeable sorts were Orange King, the bronze Goudvink, Inglescombe Pink, Ronald Gunn and Boadicea.

Next to the Rev. Rollo Meyer's exhibit was one staged by Mr. H. Prins, the centre of whose bank of Tulips was occupied by baskets of selected mixed blooms. Eclipse, Copper King and Henry Clay were represented by fine examples; while such Darwin varieties as Sulpherino, the bronze-coloured Dignity, Glow, and Yellow Giant, were finely staged.

Messrs. D. Stewart and Sons, Ltd., arranged some fine pillars of magnificent blooms of Walter T. Ware, Boadicea, Louise XIV, Mrs. Moon, the large, yellow-flowered Ellen Willmott, and the beautiful Mrs. Keller.

Inglescombe Yellow was well shown in this collection, as also were Farncombe Sanders, La Tulipe Noir, the vivid scarlet Gesneriana spathulata, crimson Eclipse, rich rose Venus, and the golden-yellow Avis Kennicott.

Mr. H. G. Longford staged a small collection of Tulips, the most striking of which were the vivid, orange-scarlet Grenadier, the pale yellow Arethusa, Prince of Orange, Mrs. Kerrell and Sir Harry; while there were also good blooms of Logan Rose, a dainty little Cottage variety; Dido, Hippolyta and Faust.

Most beautiful of all was the wonderful bank of blooms arranged by Messrs. Barr and Sons. Here were to be seen marvellous blooms of Andromaque, Margaret, Zulu, Farncombe Sanders, Louise XIV, exceptionally fine, After Glow, the rich purplish-bronze James Watt, Antony Roozen and Bleu Aimable, all Darwin varieties. Among the numerous Cottage Tulips the most striking were Illuminator, Fire Dragon, Arethusa, Grenadier, John Ruskin and Avis Kennicott; while of sorts with feathered and flamed blooms, there were Hebe, King Fisher, L'Union, Semile, Sirene, Chameleon and Gloria Mundi.

Mr. G. W. Miller showed, in conjunction with his exhibit of Trollius, a small collection of Tulips, amongst which there were good specimens of Sirene, a deep rose Cottage variety; Picotee, Grand Yellow, and Orange and Lemon; other good sorts were Dorcus, Henry Clay, Farncombe Sanders and Irsulinde.

Fruit and Vegetable Committee.

Present.—Mr. C. G. A. Nix (in the chair), Mr. J. Cheal, Mr. W. Poupart, Mr. G. F. Tinley, Mr. T. Pateman, Mr R. H. Hall, Mr. A. W. Metcalfe, Mr. P. D. Tuckett, Mr. A. Poupart, Mr. F. Bostock, Mr. H. Markham, Mr. W. H. Divers, Mr. E. A. Bunyard and Mr. A. N. Rawes (Secretary).

A Savoy, shown by Mr. M. Roberts, 38, West Bank, Scarborough, was recommended for trial at Wisley.

The Hon. Vicary Gibbs showed a variety of Rhubarb named The Streeter. The stems were of enormous size, some being well over two feet in length and almost two inches in thickness, while they were also richly and evenly coloured.

NATIONAL TULIP.

The annual show of this Society was held in conjunction with the R.H.S. meeting on May 8 and 9. The number of entries for the various classes was very limited, but the quality of the blooms displayed was high and some very attractive sorts were to be seen.

In the class for twelve dissimilar rectified Tulips, two feathered and two flamed of each class, Sir A. D. Hall was placed first, with well-grown specimens: Sambo, a golden-yellow and purple-flowered variety; Cyrano, T. W. Bentley, Mabel, with white flowers flamed with red; George Edwards, with white, purple-marked blooms, and others.

C. W. Needham, Esq., of Kelmscott, Hale, Cheshire, received the first prize in the section for six dissimilar rectified Tulips, one feathered and one flamed of each class, the varieties with which he was successful being Paxton, Maggie, George Edwards, Gleam, Mrs. Collier and Stockport; he was also the successful exhibitor in the section for three flamed Tulips, with fine specimens of Sir Joseph Paxton, yellow, heavily marked with purplish-crimson; Vega, a red and white variety; and Ida Sutton.

Mr. W. Peters won the first prize for three feathered Tulips with good blooms of Lucy Luard, Jane, a white variety feathered with red; and the golden, scarlet-marked Robin.

In the section for six Breeder Tulips, dissimilar, Mr. Needham was again the successful exhibitor, with good blooms of Alfred Lloyd, rich orange-scarlet; Daphne, light purple; Rhoda Backhouse, red; Cecil Dolling, deep rose-purple; and Maggie, deep rose. In the class for three Breeder Tulips (dissimilar) he was also the first prize winner with Athos, a purple, white-throated variety; Celia, red, with a purplish sheen; and Gleam, an orange-scarlet Tulip.

The Samuel Barlow prize for the best pair of rectified Tulips, was won by Sir A. D. Hall, with magnificent blooms of Sam Barlow and Britomart; the former is golden-yellow, marked with bronzy-crimson, and the latter white, with the margin of the petals feathered with purple.

There were no exhibits in the classes for six dissimilar rectified Tulips, two of each class; three dissimilar Breeder Tulips, one of each class; and two rectified Tulips.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

At the meeting held on Friday, April 13, 1928, the members of Committee present were: Messrs. J. B. Adamson (in the chair), A. Burns, B. Collins, A. Coningsby, J. Evans, A. Keeling, D. McLeod and H. Arthur (Secretary).

First Class Certificates.

Dendrobium infundibulum var. magnificum.—A very fine, round flower, over four inches across, with deep orange throat; *D. plumptonense, Towneley Giant,* the finest form of the type yet seen. From J. B. Adamson, Esq.

Cymbidium Glasgow var. Othello (*Schleglii* × *eburneo-Lowianum*).—A long spike of buff-yellow flowers with brownish lines; lip with crimson band and lines.—From Mrs. Bruce and Miss Wrigley.

Dendrobium Montrose (*Thwaitesiae, Veitch's var.* × *Ainsworthii*).—From Messrs. A. J. Keeling and Sons.

Awards of Merit.

Dendrobium Merlin, Towneley Grove var.; D. Rubelius (*rubens* × *nobile nobilius*)*; D. nobile atrorubens, Adamson's var.: Odontoglossum plumptonense var. albo-violaceum; O. crispum var. Diamond,* and *O. Fabia var. Emperor.*—From J. B. Adamson, Esq.

Brasso-Laelio-Cattleya Jupiter var. splendens: Odontoglossum Phena var. Majestic: and *Miltonia Bleuana rosea var. delicata.*—From the Hon. G. E. Vestey.

Cultural Certificates.

To Mr. J. Howes, for Dendrobium infundibulum and D. nobile album; and to Mr. B. Collins, for Odontoglossum Tityus.

Groups.

J. B. Adamson, Esq., Blackpool (gr. Mr. J. Howes), staged a group to which a Gold Medal was awarded. Dendrobiums were presented in great variety, with fine Odontoglossums, Odontioda Hippolyta, O. Leeanum and O. Bradshawiae; Cypripedium beechense superbum; Brasso-Cattleya Cliftonii magnificum; Laelio-Cattleya Luminosa aurea; Angraecum Sanderianum; Masdevallia igneo-Estrada (second class Bot.), and others.

Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. A. Burns), were awarded a Large Silver Medal for a group containing Cymbidium Glasgow vars. Othello and Jago, C. Roger Sander vars. Jessica and Beatrice, and C. Gottianum; Lycaste Skinneri vars. alba magnifica, Maid Marion, rosalba, rosea, The Peach, Apple Blossom, Robin and Pax; Coelogyne Sanderae and Rolfeara Sunrise.

The Hon. G. E. Vestey, Birkdale (gr. Mr. B. Collins), was also awarded a Large Silver Medal for a group containing Odontioda Brewii, O. Charlesworthii, O. rosefieldense and O. Lambeauiana; Odontoglossum Phena var. Majestic and O. Tityus; Brasso-Laelio-Cattleya Jupiter var. splendens; Calanthe Rubens and others.

Mr. John Evans, Colwyn Bay, was awarded a Silver Medal for a group of Odontoglossums and Odontiodas.

Captain W. Horridge, Bury, (gr. Mr. A. Coningsby), sent Dendrobium Merlin, Bolholt var. and seedlings.

Messrs. A. J. Keeling and Sons exhibited Dendrobium Montrose and Odontoglossums.

At the meeting held on Friday, April 27, the members of Committee present were: Messrs. J. B. Adamson (in the chair), A. Burns, B. Collins A. Coningsby, J. Evans, A. Keeling, G. V. Llewelyn, D. McLeod, W. J. Morgan and H. Arthur (Secretary).

First Class Certificate.

Odontioda Maureen var. grandiflora; the most brilliantly coloured form of the type yet seen. From Captain W. Horridge.

Awards of Merit.

Miltonia Hyeana var. Lady Bain; M. Jules Hye de Crom var. Dracula, and M. Nellie Smith var. Nuthatch. From Mrs. Bruce and Miss Wrigley.

Brasso-Cattleya Ajax var. splendens; Miltonia Ruby, and M. Carmine. From G. V. Llewelyn, Esq.

Odontioda Sensation var. Marion and Vanda Bensoniae. From J. B. Adamson, Esq.

Miltonia Lyoth, The Warren var., and M. Bleuana grandiflora, The Warren var. From the Hon. G. E. Vestey.

Awards of Appreciation.

To Cypripedium Mrs. James Clark var. Mary. From J. H. Clark, Esq.; and to Dendrobium var. Brilliant. From G. V. Llewelyn, Esq.

Cultural Certificates.

To Mr. A. Burns, for well-flowered plants of Sophronotis grandiflora; and to Mr. J. Howes, for Sophro-Laelio-Cattleya Anzac var. Vesuvius.

Groups.

J. B. Adamson, Esq., Blackpool (gr. Mr. J. Howes), staged a group to which a Silver-gilt Medal was awarded. This contained Odontoglossum eximium, O. Colossus, O. Amethyst, O. elegantulus, O. Pyramus, O. amabile and O. crispums; Odontioda Olympus var. nigrum, O. Sensation, O. Princess Mary and O. Bradshawiae; Brasso-Cattleya Apollo; Cattleya Stuartii alba; Vanda Bensoniae and Maxillaria Harrisoniae.

Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. A. Burns), were awarded a Silver Medal for a group of Sophronitis grandiflora, with Miltonias in variety.

Mr. John Evans, Colwyn Bay, staged a group to which a Silver Medal was awarded. The Odontoglossums included O. Colossus, O. Orosius and O. citrosmum, with Odontioda Juno var. Evansiae, O. Bradshawiae, Miltonia Kathleen var. Mary Sander and M. Beau Brummel.

Captain W. Horridge, Bury (gr. Mr. A. Coningsby), staged Odontioda Maureen var. grandiflora, O. Colinge, O. Schröderi and Dendrobium Draconis.

G. V. Llewelyn, Esq., Southport, staged Brasso-Cattleya Ajax var. splendens, Dendrobium Merlin var. Brilliant; Miltonia Ruby and M. Carmine.

The Hon. G. E. Vestey, Southport (gr. Mr. B. Collins), staged Miltonia Lyoth The Warren var., M. Bleueana grandiflora var. Regina, with Odontioda Charlesworthii and O. keighleyensis. J. H. Clark, Esq., Andenshaw, staged Cypripedium Mrs. James Clark var. Mary, and Messrs. J. Keeling and Sons, Bradford, showed C. Grey Friar and Odontioda Hilda. Mr. D. McLeod, Chorlton-cum-Hardy, exhibited Cypripedium Carola.

TRADE NOTES.

The requirements of a lawn-mower to-day are that it work swiftly, noiselessly and efficiently. All these requirements are met by the J.P. Super Mowers, hand or power. From machines of this pattern all friction has been completely eliminated, as the accurately cut epicyclic gearing, ball bearing and roller chain are thoroughly encased and run in oil. All parts are interchangeable, and may be inserted by anyone in a few moments. The makers, Messrs. J.P. Super Lawn Mowers, Ltd., Meynell Road, Leicester, offer working demonstrations through any of their registered stockists, and if so desired, sell their machines on the out-of-income plan of payment.

Messrs. Corry and Co., Ltd., of Bedford Chambers, Covent Garden, London, have discovered an effective moss destroyer, and one that remains effective for nine to twelve months, and in addition brings the gravel back almost to its original colour. This preparation is a powder for sprinkling on the gravel at the rate of half-a-pound per square yard, and for which the same firm supplies a special sprinkler. This powder is known as Corry's Hard Court and Gravel Path Moss Remover, and was only discovered after years of practical tests.

Obituary.

Francis Robinson.—In the death of Mr. Francis Robinson, which took place at his residence, Arnside, Prestwick Park, Manchester, on May 1, at the age of eighty-one, the horticultural trade in general loses an old and highly respected member. For nearly sixty years he has been senior partner of Messrs. Dickson and Robinson, of Manchester. To within but a few years ago he was a well-known figure in London and the southern counties, visiting the large establishments as much in the light of friendship as in his business capacity. His genial, yet open and direct manner made his friendship a thing to seek, and once made, real and lasting. In public activities he took little part, but his word and his counsel have many a time influenced, if not directed, the course of events to a certain and sure issue. Mr. Robinson was for many years a member of the Council of the Manchester Royal Botanical and Horticultural Society when that Society was at the height of its influence. He was an original member and Vice-President of the Manchester Horticultural Mutual Improvement Society, now inactive. His association with agriculture, especially in the north, was particularly intimate, and he was one of the first to recognise the importance of the Wild White Clover as a plant for permanent pasture land, and in the growing and distributing of it ever since he has been its champion. His ability and judgment were peculiarly good and sound, but neither was ever manifest save with marked modesty, and in the advancement of the work he loved so much and to which he gave himself wholeheartedly. His energy was untiring; he was the hardest of workers. Although latterly much afflicted, his interest in and love for his profession never flagged; he was active in its welfare, even to within a day or two of his death, and with nearly the same cheerful, encouraging demeanour which was ever one of his fine traits. Kindly of heart almost to a fault, he was a fine gentleman. The funeral took place at the Prestwich Parish Church on the 4th instant.

THE LATE FRANCIS ROBINSON.

ANSWERS TO CORRESPONDENTS.

Correction.—In our report of the London Daffodil Show, held on April 17 and 18, we stated that Mr. E. T. England was placed second in the class for six varieties raised by the exhibitor (p. 287). This was a mistake, as we now learn that Sir Charles Cave was awarded the second prize.

Gloxinia Leaves Diseased.—*J. W. B.* The leaves are attacked by eelworms (Aphelenchus oleistus), which have migrated from the soil and invaded the leaves through the stomata. They often pass from leaf to leaf in this way, and the pest is fairly common and disastrous in houses kept so moist that there is often a film of moisture over stems and leaves, through which the eelworms travel. Ferns and Begonias are attacked by the same species. Burn the diseased plants at once and steam or bake the soil in which the plants have been growing. Dry out the house which has been kept too humid. The Pelorgonium leaves have what are known as "intumescences," *i.e.*, alterations, generally enlargements, of the tissues, in certain places, following an injury such as may be caused by thrips or aphis. It is also more common under humid conditions. Keep the plants clear of these pests, and do not allow the atmosphere to become too moist.

Kurume Azaleas.—*G.* Only the wild type of the Kurume Azaleas grows wild on Mount Kirishim. The named varieties of Kurume Azaleas are a race of hybrids which have been grown and developed for more than a hundred years in the city of Kurume. With one or two exceptions, they are not suitable for general outdoor culture in England except in the mild climate of the south and west. English authorities have had little, if anything, to do with the boosting of the Kurume Azaleas, and most of the literature on the subject, and the naming, is from America.

Names of Plants.—*H. N. G.* 1, Omphalodes cornifolia; 2, Cardamine latifolia; 3, Dicentra formosa; 4, Omphalodes verna; 5, Lathyrus vernus; 6, Pulmonaria officinalis purpurea.

Nectarine Leaves Diseased.—*R. H.* The Nectarine leaves are attacked by the Shot-hole fungus (Cercospora circumscissa), which is not an uncommon disease of "stone" fruit trees. Spraying with an ammoniacal solution of copper carbonate so soon as possible, and repeating the application at intervals, may rid the trees of the disease.

Wireworms in Loam.—*F. B.* The best and quickest way to destroy wireworms in loam would be to treat it with bisulphide of carbon (also written disulphide of carbon) CS_2. This is a transparent, colourless, inflammable (explosive) stinking liquid, and no light, not a lighted pipe, must be brought near it while it is being used. As the liquid is volatile and soon disperses, your chief difficulty will be to keep it in the loose loam until it has done its work. The quickest method, perhaps, would be to dig a square hole in the garden, about a foot deep, and put the loam in that, packing it as closely as possible with crumbs or small portions between the large, if the loam is in sods. Bore holes with a dibber, about nine inches deep, and in the centre of every square yard. Have some fine soil in a box beside you, pour a dessert spoonful of the liquid into each hole and fill the latter immediately with the fine soil. Some wet sacks, old carpets or tarpaulin should also be in readiness to cover the whole of the loam for at least twenty-four hours, to keep in the fumes. To treat a truck-load of the loam, you may have to deal with it in sections, so that you may use the same hole for all of it.

Communications Received.—B. P. M. (Thanks for 2/6 for R.G.O.F. Box).—A. T. J.—G. F. G.—R. E. A.—W. H. D.—F. S. B.—W. J. D.—T. W. B.—A. M. M.—F. B.—A. Z.—W.O. W.—H. W.—R. F. W.—R. E.—H. A. T.

MARKETS.

COVENT GARDEN, Tuesday, May 8th, 1928.

Cut Flowers, etc.: Average Wholesale Prices.

	s. d. s. d.
Adiantum decorum, doz. bun.	12 0–15 0
—cuneatum, per doz. bun. ...	8 0—9 0
Anemones, St. Brigid, per doz. bun. ...	3 0—4 0
Arums (Richardia), per doz. blooms ...	3 0—4 0
Asparagus plumosus, per bun. long trails ...	2 6—3 6
—med. sprays	2 0—2 6
short „ ...	— 1 0
—Sprengeri, bun. long sprays...	2 0—2 6
med. „ ...	1 0—1 6
short „ ...	0 6—1 9
Carnations, per doz. blooms	2 6—4 6
Croton leaves, per doz. ...	1 9—2 6
Daffodils, per doz. bun.—	
—Emperor ...	5 0—6 0
Ferns, French, per doz. bun.	10 0–12 0
Forget-me-nots, per doz. bun.	8 0–10 0
Gardenias, per doz. blooms ...	6 0—9 0
Gladiolus, The Bride, per doz. bun.	15 0–18 0
— Blushing Bride, per doz. bun.	15 0–18 0
— Peach Blossom, per doz. bun.	15 0–18 0
Heather, white, per doz. bun.	— 12 0
Hydrangea, white, per doz. bun.	36 0–48 0
— pink, per doz. bun.	24 0–30 0
Iris, per doz. blooms—	
—blue	1 6—2 0
—white ...	1 6—2 0
—yellow ..	2 0—2 6
—mauve ...	1 6—2 0
Ixia, scarlet, per doz. bun. ...	2 6—3 0
—mixed, per doz. bun. ...	3 0—3 6
Lapageria, white, per doz. blooms	4 0—4 6
Lilac, white, per doz. sprays...	4 0—6 0
—mauve, per doz. spikes ...	6 0—7 0
Lilium longiflorum, long, per bun.	2 0—2 6
— —short, doz. blooms ...	2 0—2 6
Lily-of-the-Valley, per doz. bun.	24 0–36 0
Marigolds, per doz. bun. ...	4 0—6 0
Myrtle, green, per doz. bun.	1 6—2 6
Narcissus Poeticus, per doz. bun.	2 0—2 6
—double white, per doz. bun.	5 0—6 0
Orchids, per doz.	
—Cattleyas ...	21 0–30 0
—Cypripediums	8 0–10 0
Pelargoniums, white, per doz. bun.	9 0—10 0
Roses, per doz. blooms—	
—Butterfly ...	3 0—4 0
—Columbia ...	3 6—4 0
—Golden Ophelia	3 6—4 0
—Richmond ...	3 6—5 0
—Aaron Ward	2 6—3 0
—Roselandia...	3 6—4 6
—Hoosier Beauty	4 0—5 0
—Molly Crawford	3 0—4 0
Smilax, per doz. trails ...	7 0—8 0
Stephanotis, 72 pips	3 0—3 6
Stock, white, per doz. bun. ...	10 0–15 0
Sweet Peas, various, per doz. bun.	9 0–18 0
Tulips, per doz. bun.—	
— single, white	9 0–15 0
— — red ...	9 0–12 0
— — pink ...	9 0–15 0
— — mauve ...	10 0–15 0
— — yellow ...	15 0–18 0
Viola cornuta, per doz. bun.	1 6—2 6
Wallflowers, per doz. bun. ...	3 0—4 0
French flowers—	
—Gypsophila, white, per doz. bun. ...	3 0—4 0
—Marguerites, yellow, per doz. bun. ...	3 0—3 6

Remarks.—Owing to more favourable conditions, supplies throughout the cut flower department have shown a further increase. The arrivals of double white Narcissi have been greatly welcomed, and supplies are on the increase, with a gradual fall in price. Larger consignments of N. Poeticus are now arriving from the Spalding district, in good condition, also some heavy supplies of Tulips. Carnations are coming to hand in good condition, the most prominent varieties being Aviator, Faith Dutton, Our Prince, Spectrum, Cupid, Delight, Enchantress, Supreme, Laddie, Lady Northcliffe, Daydream, Mrs. Hemus, Favourite, Mrs. Ward, Cerise, Mikado, Circe, Royalty, Sunstar and Sunrise; also striped and other Fancy varieties. Gladioli now on offer include Blushing Bride and Peach Blossom; a few bunches of The Bride (white) and a few spikes of Ne Plus Ultra have been on offer during the past week. The newest arrivals in this department are Iceland Poppies, Delphiniums and French Paeonies, also some Pyrethrums from Holland. More double white Stocks from home-growers are required. Supplies of French Stocks and Star Alliums are now practically over for this season, the blooms arriving from this quarter being somewhat affected by the long journey and warmer weather. All foliage has become more plentiful and prices are easier.

Fruit: Average Wholesale Prices.

	s. d. s. d.
Apples, American—	
—Newtowns ...	10 0–13 0
Apples, New Zealand—	
—Cox's ...	14 0–17 6
—Delicious ...	12 0–13 0
—Jonathan ...	11 0–13 0
—Dunn's	10 0–12 0
—Others ...	8 0–10 0
Apples, Australian—	
—Cox's Victorias	11 0–15 0
—Jonathans ...	10 0–12 0
—Ribston ...	8 6–11 0
—Cleos	12 0–18 0
—Alfriston ...	— 10 0
Bananas ...	14 0–25 0
Figs, Hothouse, per doz. ...	4 0–24 0
Gooseberries, per lb.	0 9—1 0
Grapes, English—	
—Hambro. per lb.	3 0—5 0
Grapes, Australian—	
—Ohanez ...	22 6–25 0
—Black Malaga	— 20 0
Grape Fruit—	
—Blue Goose...	— 50 0
—Florida ...	— 32 6
—Honduras ...	— 30 0
Lemons, Messina and Palermo, per case ...	14 0–20 0
—boxes ...	11 0–15 0
Melons, Hothouse, each ...	7 0–12 0

Fruit—cont.

	s. d. s. d.
Oranges, per case—	
—Valencia and Denia, per case	18 0–35 0
—Almeria ...	25 0–37 6
—Jaffa ...	18 0–19 0
Peaches, Hothouse, per doz.	18 0–48 0
Strawberries, per lb.	6 0–12 0
South African Fruits—	
Grapes—	
—Waltham X .	10 0–12 0
—Raisin Blanc	10 0–15 0
—Henab Turki	15 0–20 0
Pears, New Zealand—	
—Beurré Bosc...	4 0—5 0
—Josephine de Malines ...	4 0—7 6
—P. Barry ...	— 4 0
—Winter Cole ...	— 4 0
Pears, Australian—	
—Josephine de Malines ...	5 0—7 0
—Winter Nelis...	6 0—7 0
—Beurré Bosc...	5 0—7 0
Pineapples, per case	21 0–36 0

Remarks.—Most departments report a continuance of brisk conditions. In the choice fruit section, hothouse Grapes, Melons, Strawberries, Peaches and Figs, are meeting an excellent demand. Gooseberries from Devonshire are selling fairly well, but supplies are not heavy. English Tomatos are coming along in larger quantity, both demand and supply being favourably affected by good weather. Cucumbers are a strong market and quantities are comparatively heavy. French Asparagus is abundant and cheap, the highest quantities from the Continent coinciding with moderately large supplies of Asparagus from the Evesham district. Fruits from the Cape consist mainly of Grapes and Pears, both of which are selling quite well. Apples from Australia are a weak trade at the moment and an improvement is looked for. Hothouse Beans, Peas and Potatos sell freely, and considering arrivals are heavy each day, prices are keeping up well. Mushrooms are more abundant and quoted cheaper. All varieties of salad are enquired for and selling levels are high. Green vegetables are, for the time of year, scarce and dear. The old Potato trade is not so keen, and prices are inclined to fall. Spanish new Potatos are a firm market, supplies generally being below requirements.

GLASGOW.

The continuance of fine weather last week increased the already large daily supplies of Tulips and Daffodils and had the effect of depressing prices down to an exceptionally low level. At one time William Copland blooms were sold at 1d. per bunch of a dozen, while Bartigon made 1d. to 3d. for 6's; and Farncombe Sanders, Clara Butt, Pride of Haarlem and other Darwin sorts, 2d. to 4d. An improvement subsequently set in, but as may be seen from the following week-end prices, values were very much below the level of the previous week:—Princess Elizabeth, 5d. to 7d. for 6's; Bartigon, 3d. to 6d.; Clara Butt, 4d. to 6d.; Pride of Haarlem, 2d. to 4d.; White Swan, 1d. to 3d.; Bouton d'Or, 6d. to 10d.; William Copland, 3d. to 6d.; and Farncombe Sanders, 4d. to 8d. Emperor Daffodils ranged from 1s. 6d. to 2s. 6d. per dozen bunches; Sir Watkin, 1s. to 1s. 6d.; and Ornatus, 1s. to 1s. 9d. L. longiflorum made 1s. 6d. to 2s., and Arums (Richardias), 2s. to 3s. Carnations were fairly steady at, 3s. to 4s. per dozen; red Roses, 1s. 6d. to 2s. 6d.; pink 3s. to 4s.; white, 1s. 6d. to 2s. 6d.; yellow, 2s. to 3s. 6d. Irises sold at 1s. 6d. to 2s. 6d.; Lilac, 6d. to 1s.; Anemones, 3d. to 5d.; and Lily-of-the-Valley, 2s. 6d. to 3s. Locally-grown Sweet Peas made 1s. 8d. per bunch. Bedding-out plants were again abundant, and all the popular annuals and biennials could be purchased at prices varying from 1s. to 2s. per box.

In the fruit market, Strawberries made 1s. 6d. per punnet of half-a-pound; Peaches, 10s. per dozen; Grapes 5s. per lb.; Pines, 5s. to 6s.; Jaffa Oranges, 17s. to 19s. per case; Californian Grape Fruit, 24s. to 28s.; and South African Pears, 3s. 9d. to 5s. 6d. per box. Prices for Australian Apples were: Jonathan, 16s. 6d. per case; Ribston Pippin, 12s. 6d. to 14s. 6d.; American Winesap, 13s. to 15s. 6d.; and Newtown Pippins, 13s. 6d. to 16s. English Tomatos were worth from 1s. 4d. to 1s. 8d. per lb., and field Rhubarb was plentiful at 8s. per cwt.

Vegetables were in moderate demand. English-grown Cucumbers ranged in price from 7s. to 9s. per dozen; Scotch, 8s. to 10s.; Dutch Cauliflowers, 4s. 6d. to 7s.; Lettuce, 2s. 6d. to 3s. 6d.; Mushrooms, 3s.; Carrots and Turnips, 1s. to 1s. 3d. per bunch; Asparagus, 1s. to 1s. 6d. per bunch; spring Onions, 6d.; and new Potatos, 14s. per cwt.

CATALOGUES RECEIVED.

Bayer Products, Ltd., 19, St. Dunstan's Hill, E.C.3.—A guide to scientific seed-dressing.

Barr and Sons, 11, King Street, Covent Garden, W.C.2.—Seeds for May and June sowing.

Daniels, Ltd., Norwich.—Summer beds and borders.

H. J. Jones, Ryecroft Nurseries, Lewisham, S.E.13.—Dahlias, Fuchsias, etc.

Foreign.

H. den Ouden and Son, The Old Farm Nurseries, Boskoop.—Trees and shrubs, etc.

SCHEDULES RECEIVED.

International Horticultural Exhibition at Le Mans, to be held from June 8 to June 17.—Secretary, M. Louis Ragot, Le Mans, France.

Société Royale d'Horticulture et d'Agriculture d'Anvers.—One-hundred-and-ninety-fifth exhibition, to be held in the Grand Salle des Fetes de la Ville, Antwerp, from September 9 to September 16.—Secretary, 28, rue de Moulin, Antwerp.

THE
Gardeners' Chronicle

No. 2160.—*SATURDAY, MAY* 19, 1928.

CONTENTS.

Allotments rate-free... 348
Alpine garden—
  Polygala Vayredae 352
  Sedum kamtschaticum 352
  Silene Hookeri ... 352
  Veronica Teucrium dubia 352
Apple growing, a new intensive system of commercial... ... 356
Apple scab 360
Bog and Water Garden—
  Saxifraga peltata ... 353
Book, notice of—
  The Gardens of Japan 356
Bulb garden—
  Muscari conicum at Kew 352
Daffodils at Brodie Castle 348
Elm trees, treacherous 348
Flower garden—
  Heliotropes ... 353
Forget-me-not, the Norwegian 360
Fraser, Mr. George ... 348
Fruit garden, the market 358
"Gardeners' Chronicle" gold medal at Ghent 348
"Gardeners' Chronicle" seventy-five years ago 349
Gatton Park Orchids at New York 348
Ghent Floralies, 1928 349
Hardy flower border—
  Pyrethrums ... 353
Indoor plants—
  Browallia speciosa major 356
  Lobelia tenuior ... 356
  Nidularium Meyendorffi 356
Iris Society's Show ... 347
Narcissus Angel's Tears 360
National Rose Society's new Rose Trial Ground 348
Obituary—
  Forbes, Alexander... 363
  Waterman, Wm. ... 363
Plants new or noteworthy—
  A hybrid Meconopsis 353
Plants, the origin of cultivated 347
Polyanthus, the old blue 360
Primula, the genus ... 354
Primula acaulis var. E. C. Buxton's Double Blue ... 352
Pyrus Malus Russell's Weeper, award to... 360
Slugs, the destruction of 361
Societies—
  Association of Parks and Botanic Gardens Superintendents 363
  Deeside Field Club... 362
  Fédération Horticole Professionnelle Internationale ... 361
  Moray Field Club ... 363
  New York Horticultural 362
  Truro Spring Show 362
Temple Gardens, new fountain in the ... 347
Trees and shrubs—
  Ceanothus rigidus... 355
  Osmanthus Delavayi 355
Vegetable Garden—
  Runner Beans ... 359
Week's work, the ... 350

ILLUSTRATIONS.

Apple cultivation, intensive 351, 357, 359
Fraser, Mr. George, portrait of 348
Meconopsis, a hybrid 353
Pyrus Lemoinei 349
Silene Hookeri 355

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 55·1°.

ACTUAL TEMPERATURE.—

The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London, Wednesday, May 16, 10 a.m. Bar. 29·6 Temp. 42°. Weather, Wet.

The Origin of Cultivated Plants.

So much has been written and so little has been discovered with respect to the origin of cultivated plants that of recent years botanists and horticulturists have tacitly agreed to leave the subject alone; a wise decision when, as in this case, lack of precise knowledge renders discussion mere verbiage. Now, however, as Dr. C. H. Ostenfeld points out in his "Masters Lectures,"[*] knowledge derived from recent observation and experiment throws new light on this old subject. Everyone interested in gardening knows that many of our cultivated plants are supposed to be, and many others are known to be, of hybrid origin. Most cultivated plants, indeed, are often so distinct from any wild species as to make it impossible to believe that they have been produced by a mere selection of varieties of wild species and therefore, either like Topsy, they "just growed," or they are of hybrid origin, and have resulted from the crossing of distinct species. But study of the behaviour of species crosses does little at first sight to support this opinion. In the case of many genera it is extremely difficult or even quite impossible to hybridise the different species with one another. In other well-known cases, although two species may cross with one another the offspring are sterile. Field observations, likewise, tend to indicate that even when a hybrid between two species arises naturally, it is often unable to make good its claim to a place in the sun. Geum rivale, a plant of wet meadows, with drooping rose-coloured flowers, may grow near Geum urbanum, a woodland and hedgerow plant with erect, yellow flowers and a later period of flowering. In spite of this last difference, hybrids known as Geum × intermedium sometimes occur in Nature. The hybrid origin of this plant has been proved experimentally by crossing Geum rivale and Geum urbanum. The hybrid is fertile. Its descendants show segregation, that is, they exhibit a great diversity of characters; but when the hybrid is crossed back with either parent species, the offspring, although not identical with, closely resemble the parent used in the cross. It may be supposed that of the many diverse combinations of characters exhibited by the descendants of the selfed hybrid, the combinations which are nearest to those of the parent are best fitted for existence. It would therefore follow that this hybrid, Geum intermedium, can have but an ephemeral existence. Field observations confirm this conclusion, and seem to lead to the conclusion that natural species-hybrids play but a small rôle in species making; for the original species persist, and the species-hybrid appears but fitfully and transiently. But if that be indeed so, how are we to account for the origin of these cultivated plants which are attributable to hybridisation. There are plenty of well-known examples of plants which have hybrid origin. Our gardens abound in them and even Nature occasionally disports them. The Oxford Plane is a hybrid between Platanus occidentalis and Platanus orientalis. Many Elms are also of hybrid origin. Close study of one or two garden hybrids throws light on this difficult subject. Primula kewensis is a hybrid between P. floribunda and P. verticillata. The hybrid is sterile, but in the case of a branch of one plant the flowers proved fertile, and from them have proceeded all the P. kewensis plants and seeds now in existence. A somewhat similar case is that of the hybrid made by crossing Nicotiana glutinosa with N. Tabacum. It is generally sterile, but in one case one of the hybrids gave, on selfing, a few fertile seeds. Three individuals arose from these seeds, and one of these produced, on selfing, sixty-five plants. These plants all resembled the hybrid and were fully fertile. Now, and here begins the unravelling of this tangled story. These fertile individuals had all of them a new kind of cell-nucleus in their cells. To show the nature of this nucleus it is necessary to explain that when any cell divides, a definite number of deeply-staining, rod-like bodies derived from the nucleus make their appearance. They are the chromosomes. As the cell divides, so do the chromosomes, each becoming cloven into two similar halves—splitting longitudinally, in fact—and presently, when the cell has given rise to two daughter cells, one half of each of these chromosomes is found in one daughter cell and the other half in the other, and this process is repeated in all cell divisions of the plant body. When, however, the plant makes the sexual cells which are contained in the pollen grains and in the ovules, the chromosomes behave differently. Instead of each chromosome dividing, they fuse in pairs, and then when the cell divides, the pairs separate so that the sexual cells have only half the number of chromosomes that are contained in the body cells. Then reproduction takes place, and male cell meets female cell; the fertilised egg cell containing all the chromosomes from each cell comes to have the double number characteristic of each of the body cells which are produced from it. Now Nicotiana glutinosa has twenty-four chromosomes in its body cells and twelve in its reproductive cells. N. Tabacum has forty-eight and twenty-four. When the species are crossed, the twelve of the one parent and the twenty-four chromosomes of the other unite as best they may, with the result that the fertilised egg cell and all the cells of the hybrid plant body which are formed from it, have $12+24=36$ chromosomes. No wonder that this unequal mating of twelve and twenty-four is an uneasy business, and that the hybrid is sterile! But how did the one fertile hybrid plant arise? An examination of the cells produced in the fertile descendants supplies the answer. They contain seventy-two chromosomes, and the reproductive cells thirty-six chromosomes. But as stated, the original hybrid had thirty-six as its body cell chromosome number. Hence it follows that in the hybrid which proved fertile each of the thirty-six chromosomes *must have doubled*, and in that way the number of chromosomes of the body cells became seventy-two. When the reproductive cells were formed, the seventy-two would unite in pairs to produce thirty-six and when reproduction took place and pollen reproductive cell united with egg cell, there would no longer be the sterile difficulty of twelve attempting to pair with twenty-four, for there would be thirty-six male and thirty-six female chromosomes. Union would be normal, and a plant of fixed type—a new species, in fact—would be brought into being. A like event took place in the fertile branch of P. kewensis. The reduced number of chromosomes in each parent, P. floribunda and P. verticillata, is nine, whereas the reproductive cells of the fertile P. kewensis each contain eighteen chromosomes. As Dr. Ostenfeld shows, there are now many other well-known examples of fertile hybrids in which there has been a doubling, and in some cases a quadrupling or other multiplication of chromosomes, and in these cases the regular augmentation of the chromosomes number is accompanied by fertility of the hybrid. The hybrid, therefore, like faith, is the evidence of things not seen; the unseen things being, in the case of the hybrid, the chromosomes. It would seem that only when a doubling, quadrupling or higher multiplication of the chromosome number makes possible a regular symmetrical pairing of the chromosomes of the reproductive cells can the hybrid become fertile.

New Fountain in the Temple Gardens.—A new fountain, placed in the Temple Gardens by the Benchers in memory of Charles Lamb, played for the first time on Sunday, May 6. It is an attractive fountain, sending up three sprays of water shaped like the feathers in the crest of the Prince of Wales, and is the result of a suggestion by Sir Francis Taylor, Master of the Gardens.

Iris Society's Show.—The schedule of the Iris Society's Show, to be held at the R.H.S. Hall. Vincent Square, Westminster, on Friday, June 8, may now be obtained from the Hon. Secretary, Mr. G. L. Pilkington, Lower Lee, Woolton, Liverpool. This show is open to all amateurs and nurserymen, and entries should reach the Hon. Secretary not later than by May 31. All members of the Iris Society will receive three free tickets; these, and the R.H.S. Fellows' tickets, will admit at 12 noon on the day of the show, or earlier if the judging is finished. Among the trophies to be competed for are the Silver Medal of the American Iris Society, for bearded Irises of American raising or origin; the Dykes Memorial Medal, to the best new seedling Iris, not in commerce, shown before the Iris Society or the Royal Horticultural Society during May and June; and the Society's Challenge Cup, presented by Mrs. Philip Runciman, to be awarded to the best amateur's exhibit. There are twenty-one classes in all, which are divided into five sections: amateurs' classes for bearded Flag Irises; open classes for new seedling bearded Flag Irises; for new seedlings other than bearded Flag types; amateurs' classes for other than bearded Flag Irises; and a non-competitive section. The show is open to artists who desire to exhibit pictures of Irises.

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[*] Masters Lectures, 1927. The Present State of Knowledge in Hybrids between Species of Flowering Plants. By Dr. C. H. Ostenfeld, *Journal* of the Royal Horticultural Society, LIII, Part 1. Jan., 1928.

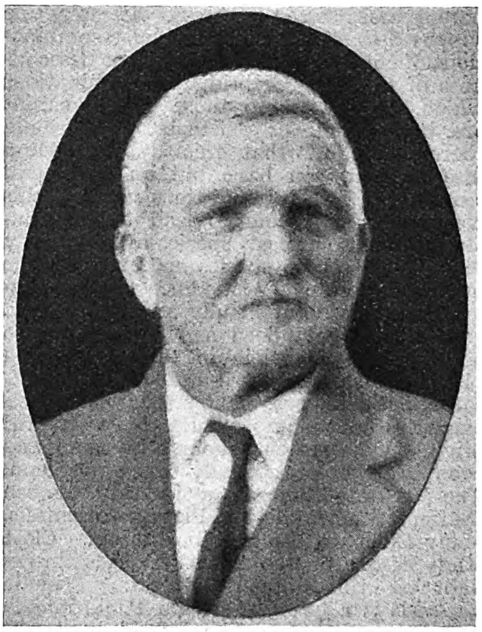
Treacherous Elm Trees.—On Sunday last, a large branch fell from an Elm tree at the Hyde Park Corner end of Rotten Row. This branch was about forty feet long, and in its fall it brought down another large branch, breaking the iron railings and damaging several chairs. Fortunately, no one was hurt as comparatively few people were seated, owing to the comparatively cool weather.

Allotments Rate-free.—Allotments and market gardens are, apparently, to be exempted from rates under the Government's rating proposals. In his reply to the Allotments Organisation Society on the subject, the Prime Minister states: "It is proposed that all land which at present has the benefit of the quarter rate as agricultural land shall, under the new scheme, be completely exempted from rates."

National Rose Society's New Rose Trial Ground.—The Council of the National Rose Society has established a Rose Trial Ground at Hayward's Heath, Sussex. The site has been inspected and reported upon by a special committee of experts appointed for that purpose and it is proposed to have part of the ground ready to receive plants in the autumn of 1928. The Trial Ground will be managed by a committee of experts, and be under the personal supervision of the Hon. Secretary, Mr. Courtney Page. Every care will be taken to ensure security, and special regulations will be framed for visitors. Not fewer than six plants of each new dwarf, or two plants each of a new climbing or rambling variety should be sent, and they should reach the garden not later than the middle of November. Plants should be sent by rail or post addressed to Mr. Courtney Page, Haywards Heath, Sussex. When sending new varieties it should be stated so far as possible the variety they are considered to be an advance upon, or nearly allied to. If the new variety is dwarf, six plants of the variety it is considered to be an advance upon should also be sent, so that these may be planted alongside the new variety. Should the new variety be a climbing or rambling Rose, then two plants of the variety it is considered to be an advance upon should be sent. It is most important that the stock the plants are worked upon should be stated. No new variety, unless in commerce, will bear a name in the Trial Ground, but it will be under a confidential number. The Award of the Gold Medal will remain as at present, but a new award will be made to those varieties which, after trial, are considered worthy. Raiser's plants of new varieties sent out since 1924 would be welcomed. The Council feels that in establishing a Rose Trial Ground it is filling a long-felt want, and now relies upon the raisers of new varieties of Roses, both at home and abroad, to do their utmost to make it a success by sending their new productions.

French Horticulturist Elected to the Chamber.—We are glad to learn that M. Alfred Nomblot, the Secretary of the French National Horticultural Society, and Mayor of Bourg-la-Reine, has been elected a Deputy by an overwhelming majority. His absence from the Floralies at Ghent was remarked upon by horticulturists from all countries, as he is one of the best-known figures in international horticulture, but his electoral campaign did not allow him to leave the scene of the forthcoming elections, and his success has fully justified the wisdom of his action. He has our warmest congratulations.

Mr. George Fraser.—Among the many British horticulturists who have done much for the advancement of horticulture in Canada, Mr. George Fraser ranks with the foremost, and his reputation as a plant hybridiser is widespread, as also are the results of his work. With a view to raising new plants, Mr. Fraser has chiefly confined his attention to the genera Ribes, Rubus, Fragaria, Pyrus and Rhododendron, and several of the hybrids raised by him have been figured in *The Gardeners' Chronicle* and other horticultural journals of this country. Mr. Fraser was born at Draimie, Morayshire, in October, 1854, and at the age of seventeen he went to serve his apprenticeship at Gordon Castle, under the late John Webster, at that time a noted gardener and raiser of new varieties of fruits. He gained a year's experience at Mollance, in Kirkcudbrightshire, and then spent a short time at Hartfield House, on the Clyde. In 1877, he obtained a post as foreman at Craigflower, Fifeshire, and he remembers well the occasion of the late Sir Joseph Hooker's visit to those gardens, as the guest of Sir James Colville. From Craigflower, Mr. Fraser moved to Auchmore, in Perthshire, and he records that in the year 1879, half-a-ton of Grapes was cut from the large Black Hamburgh vine growing at Auchmore, and of which he had charge. In 1884, Mr. Fraser, like many other Scotsmen, felt the call of the Dominions and he migrated to Canada. After being associated with several minor businesses, Mr. Fraser decided to commence on his own account. He secured about ten acres of forest land at Ucluelet, on the west coast of Vancouver Island, and in 1894 he commenced to build what is now a well-known and flourishing nursery, famous for Azaleas and Rhododendrons, and Heaths. Mr. Fraser is an old and valued correspondent to this journal, and amongst the several hybrids of his raising which we have had pleasure in figuring in *The Gardeners' Chronicle* are Rhododendron Fraseri, a hybrid between Rhododendron Rhodora and Azalea japonica; and Rubus robustus, R. parviflorus × R. odorata.



MR. GEORGE FRASER.

Gatton Park Orchids at New York.—We learn, by cablegram, that the American Orchid Society has awarded its specially designed Silver Cup to Sir Jeremiah Colman for his collection of twenty-four specimen Orchids, staged at the New York Show. It also awarded a Silver Medal for Lycaste Skinneri varieties that were included in this collection, and another Silver Medal to Sir Jeremiah Colman's gardener, Mr. J. Collier. The Orchids that were sent from Gatton Park to the New York Flower Show were Lycaste Skinneri alba magnifica, L. S. hellemense, L. S. Pink Pearl and L. S. Mrs. Hamilton Smith; Cymbidium President Lincoln and C. Columbus; Brasso-Cattleya speciosa, Gatton Park var.; Epidendrum polybulbon; Odontoglossum Lady Colman, O. Nellie Colman, O. New York Gem, O. Thompsonianum and O. Brownie; Odontioda The Panther, O. Bradshawiae Gillian Colman, O. Jonathan and O. Maie; Dendrobium Prince Arthur, D. Hercules and D. Alpha Eleanor; Bulbophyllum tremulum, Aerido-Vanda Myndyi and Polystachya paniculata. Several of the specimens that were shown are new hybrids raised at Gatton Park; while Lycaste Skinneri Mrs. Hamilton Smith received the first Medal for the finest Lycaste at the Ghent Quinquennial Exhibition, and at the Chelsea Show last year it was awarded a First Class Certificate. It is pleasing to record the successes which have attended Sir Jeremiah Colman's enterprising effort.

"The Gardeners' Chronicle" Gold Medal at Ghent.—The Gold Medal offered by *The Gardeners' Chronicle*, Ltd., to the Ghent Society, for award at the recent Ghent Quinquennial Exhibition, was won by M. Berthold Graetz, of Cologne, who exhibited new Hydrangeas.

Dunkery Beacon Sold.—We learn that Dunkery Beacon, the famous headland that marks the coastal termination of Exmoor, has been sold to a private buyer, and it is stated on sound authority, that the rights hitherto enjoyed by the public will not be interfered with, so that the fears of those who love this national beauty spot have now been allayed.

Daffodils at Brodie Castle.—A delightful treat was afforded the members of the Elgin Horticultural Society on their recent visit to Brodie Castle Gardens, Nairnshire, on the kind invitation of the Brodie of Brodie, when they saw one of the finest collections of Daffodils in Great Britain. Piloted by Mr. T. L. Mann, Secretary of the Society, the party were met by Mr. Annand, the gardener, who ably played the part of guide, philosopher and friend. The first thoughts that struck the visitors were the wonderful results obtained by artificial selection in the size, shape and colour of the ordinary Daffodil. At Brodie Castle this marvellous transformation is seen to perfection. The Daffodils, all named or numbered, and planted in rows, occupy large and spacious beds. The resultant colour scheme baffles description, and will long be remembered by those who had the privilege of being present. There is no space to spare in *The Gardeners' Chronicle* to give the names of the extraordinary number of varieties, but the titles of a few which attracted special attention may be mentioned. These were Venetia, Lido, Morea, Pavane, Hades, Nightlight, Askelon, Hermitage, Golden Goblet, Suvla, Hopeful, White Emperor, Riva, Hymettus, Taranto, Suda, Market Glory, Gallipoli, Tenedos, White Nile and Wheel of Fortune. The famous variety Askelon, a pure white of fine substance, came in for great praise, as did Kandahar, a large-sized yellow with an exquisitely fringed trumpet; Suvla, a white with a pale yellow perianth; Suda, with its white perianth and fringed trumpet of pale primrose; White Nile, a perfect white, with a frilled trumpet; and Fortune, with a primrose perianth and an orange-coloured trumpet with dark edging. Some of the varieties possessed broad, giant trumpets, with frilled, crinkled or recurved edges, while in others the perianth was twisted or reflexed. The colours of the flowers varied from a rich gold to pure white, the latter proving quite a novelty to many of the visitors. All shades of yellow were represented, some were pale primrose in tint, others sulphur-coloured, pale lemon, chrome yellow, canary-coloured, cream and creamy-white. There were varieties where the trumpet and the perianth were bicoloured, producing a striking contrast. All the experts present, including many gardeners, declared that nowhere in this country could be found such rare and lovely varieties. Brodie of Brodie takes a personal interest in the cultivation and hybridisation of the Daffodil, which has been carried on for more than a quarter-of-a-century in the gardens surrounding his ancestral home. After an hour or two spent among the large-crowned Daffodils, a move was made to the small-crowned sorts. Although not in such immense masses as the former, the display was delightful. The varieties Firetail, Red Star, Peris, Moonbeam, Torrid and Red Sea were exceptionally worthy of admiration, and warm were the encomiums passed on those responsible for the many floral attractions to be seen in Brodie Castle Gardens. Included in the company were the head gardeners from Gordon Castle, Rosefield, Firlands, Greeshop House, Abbeyside, The College, Kirkhill, Darliston and View Park. Mr. Mann voiced the feelings of those present, and said they were deeply grateful to Brodie of Brodie for his kind invitation to visit the gardens and inspect the wonderful collection of Daffodils. Their Society owed a great debt of gratitude to the Brodie for his invitation, and they were also indebted to Mr. Annand, whom they had been fortunate to have as a guide that afternoon. Mr. Mann then called for three cheers for Brodie of Brodie, which were given with much heartiness. In a few words the Brodie thanked his visitors and expressed a hope that they would come again, when there would be other things to be seen in the gardens.

Legacies to Gardeners.—The late Mr. Wm. Crouch, J.P., of Friars Croft, Aylesbury, who died on February 5, left £100 to his gardener, Mr. F. Small.—The late Mr. John Payne, of Melbourne, who left over £500,000, bequeathed £3,000 to his gardener.

Ghent Floralies, 1928.—The Royal Horticultural Society's deputation to the Ghent Show has made the following report to the Council, and it is signed by Sir William Lawrence, Mr. George Monro and Mr. W. R. Oldham:—"Your deputation awarded Gold Medals to the following exhibits: Messrs. Van Houtte, Ltd., La Pinte, for specimen stove plants; Messrs. Sanders, Bruges, for Orchids; M. Th. Pauwels, Meirelbeke, for Orchids; M. Vermaercke-de-Meyer, Gendbrugge, for Orchids; Messrs. Flandria, Bruges, for Azalea indica; M. Th. Piens, Melle, for Azalea indica Apollo; The Aalsmeer Growers, Aalsmeer, for a collective exhibit of cut Lilac, Roses and Cherries; Messrs. Vilmorin-Andrieux et Cie., Paris, for a collective exhibit; Mr. C. G. van Tubergen, Junr., Haarlem for Lilies and bulbous plants; and The Central Committee of Bulb Growers of Holland, for a display of cut Tulips. We are of the opinion that the show was the finest flower show of the kind that has ever been held, and, taking Chelsea as a standard, many other exhibits would have received Gold Medal awards. When it is appreciated that the one large hall alone was nine times the size of the new hall of the Society, this statement will cause no surprise. The part of the show under cover occupied almost twelve times the space which will be provided by the new hall. Your deputation received lavish hospitality at the hands of the authorities of the Floralies, and they would be glad if these authorities might receive the official thanks of the Council." Sir William Lawrence and Mr. W. R. Oldham also signed the following supplementary report:—"We should like to record our opinion that Mr. George Monro did the greatest public service to British horticulture at the Floralies. His presence, his genialty and his hospitality were alike admirable. We would also suggest that the Council should congratulate the British Committee on maintaining the high standard of British Horticulture in their exhibit at the Ghent Floralies."

Appointments for the Ensuing Week.—MONDAY, MAY 21: Romsey Gardeners' Association's Outing. WEDNESDAY, MAY 23: Royal Horticultural Society's Chelsea Show (three days). THURSDAY, MAY 24: Linnean Society's Anniversary meeting. FRIDAY, MAY 25: Manchester and North of England Orchid Society's meeting.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Effects of the Late Winter.*—The following is the way in which a few of our plants out-of-doors have fared here: Benthamia fragifera, much injured; Buxus balearica and Cistus formosus, unhurt; Clematis azurea grandiflora, on an east wall, unhurt; Erica australis, a little injured; E. mediterranea, the same; Forsythia viridissima, unharmed; Garrya elliptica, points of shoots killed; Ilex balearica, unhurt; Jasminum nudiflorum, against a wall, uninjured; Jasminum revolutum, on east wall, much hurt; Ligustrum lucidum and Berberis fascicularis, untouched; Photinia serrulata, much injured; Quercus suber, the same; Spiraea japonica and Thea viridis, uninjured; Vaccinium myrsinites, much hurt; Cupressus torulosa, rather browned. Of herbaceous plants: *Alstroemeria Van Houtte's, not at all harmed; Dielytra spectabilis, more than two feet high, and covered with flower, quite uninjured; Epimedium colchicum, E. macranthum, E. muschianum and E. grandiflorum, all unhurt; Jasione perennis, the same; Oenothera speciosa, killed, but it was a moved plant; Pentstemon McEweni, unhurt; *Platycodon grandiflorus and Silene Schafta, uninjured; Statice pseudo-armeria, very much damaged, except on a dry bank; *Statice speciosa, unhurt; Veronica Lindleyana, much injured, but not killed; *Lilium speciosum and *L. testaceum, unhurt. These two last are coming up very strongly indeed. And lastly, permit me to add that Calandrinia umbellata, in a peat bed, is quite unhurt. Those marked thus * are grown in a peat bed. While writing, I should be glad to know whether this is a common case: last year I had a plant of Lilium testaceum, which formed a number of bulbs at the crown instead of flowers. These I left till they became brown, and planted them at once in peat; they have all come up and are doing well. I should have added that on the night of Good Friday my register thermometer, in an exposed situation, eighteen inches from the ground, marked 7°, or 25° of frost. *A. R., Bromley, Kent. Gard. Chron., May 14, 1853.*

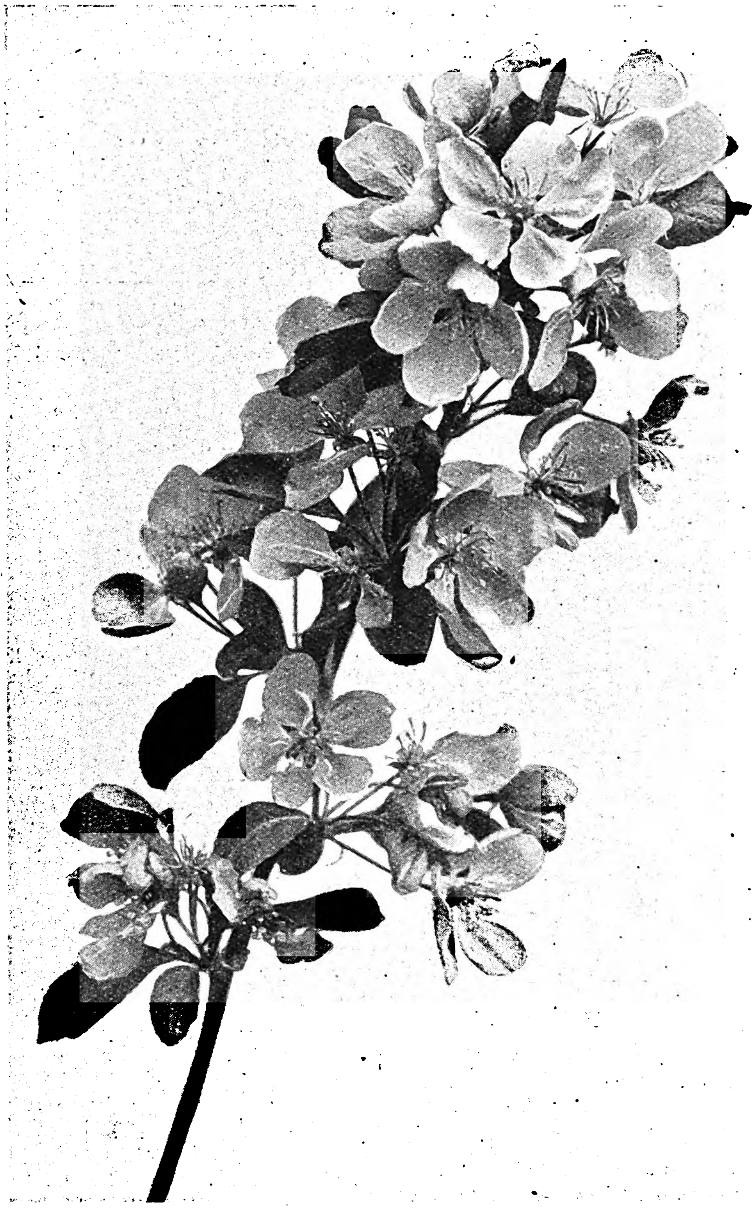


FIG. 165.—PYRUS LEMOINEI.
R.H.S. Award of Merit, May 8. Flowers, deep crimson, foliage rich bronze. Shown by Mr. R. C. Notcutt. (see p. 343).

Publications Received.—*Gartenentwürfe*, by W. F. Rosenthal; Paul Parey, Hedemannstrasse 10u. 11, Berlin, S.W.11; price, Rm. 12.—*The Gardens of Japan*, by Jiro Harada; *The Studio*, 44, Leicester Square, W.C.2; price, 7/6 net, in wrapper; 10/6 net, in cloth.—*The Culture of Vegetables and Flowers from Seeds and Roots*, by Sutton and Sons, Reading; Simpkin, Marshall, Ltd., London; price, 7/6 net.

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven Moore, Manchester.

Selenipediums.—Many species and hybrids of this graceful and attractive group of Orchids, such as S. caudatum and its varieties, the dainty S. caricinum and the hybrids S. grande, S. Dominianum and S. macrochilum giganteum, are all distinct and useful decorative plants which have made a fine display of flowers recently. As they pass out of flower, any necessary repotting may be done. For the robust-growing varieties, pots or deep pans are the best receptacles; ample drainage is required and a compost of good fibrous loam, A.1. fibre and Sphagnum-moss, used in a coarse state, with crushed crocks and charcoal added to keep it porous, should be suitable; additional Sphagnum-moss should be used on the surface. Sufficient water to moisten the compost is required until the roots are well established in the new soil; afterwards, copious supplies may be needed during the growing season. These Orchids succeed in an intermediate temperature along with Cypripediums, in a humid and buoyant atmosphere. Careful shading is necessary after root disturbance, but the robust-growing varieties require a light and airy position to ensure the production of well-matured growths and good flower spikes. Thrips often attack the fine-leaved varieties; dipping the growths in a weak nicotine solution is an effective means of eradicating these pests and care should be taken to tilt the plants to allow the insecticide to drain from the growths before placing them in an upright position again.

Dendrobium Wardianum.—Newly imported plants of this free-flowering Dendrobium, if received direct from the cases, should be placed in a cool, airy house and gradually exposed to light. Excessive moisture should not be afforded the plants until they are growing freely, for the new growths are liable to decay. The plants may be potted when the young growths are about one inch high, and grown in a light and airy position in the intermediate house. Very little water is required at the roots for some time, but as the growths and roots advance the supply should be increased and the plants and surroundings sprayed frequently during bright weather. Remove the plants to drier and cooler quarters when growth is complete, and only supply sufficient water to keep the bulbs in a normal state until the flower buds appear.

THE KITCHEN GARDEN.

By Allan Falconer, Gardener to the Cheadle Royal Mental Hospital, Cheadle, Cheshire.

Dwarf Beans.—In some districts it is not advisable to sow the maincrop outside until the middle of May, for we frequently get frosts which do a lot of damage at the end of the month. Draw drills two inches deep and nine inches apart, with three feet between the double rows; place the seeds six inches apart and thin the seedlings to one foot apart; or sow them in single rows two feet apart. Draw soil up to the plants with the hoe as they advance in growth, and when the pods begin to form, water with liquid manure and mulch the beds. Further sowings may be made at fortnightly intervals until the middle of July. For exhibition purposes, seeds should be sown in ground in good condition; give the plants plenty of room and stake each plant. Thin the clusters so as to produce long, straight and fleshy pods. It is sometimes difficult to time dwarf Beans to a day, but pods may be kept quite fresh for a week after picking by placing the stalks in half-an-inch of water in a cool place; keep them upright, change the water each day, and take a slice off the end of the stalk occasionally. The climbing French Bean is also worthy of culture and produces excellent crops.

Marrows.—Marrows that were raised in boxes and potted into four-inch pots, should be gradually hardened ready for planting out in the open during the first week in June. Where protection may be provided under hand-lights, or in frames, much earlier produce is obtained. The points of the shoots should be pinched out, and the flowers fertilised each day. When they have set, give the plants copious supplies of liquid manure to make the fruits swell. Fruits, retained for winter use should be stored in a dry cool shed and are best looped round with string and held upright, to avoid the weight of seeds and pulp damaging the centre.

Tomatos.—Plants which are in flower should have their stems tapped each day to disperse the pollen, and plenty of air should be given during the day. Avoid excessive moisture, but a slight spray with a syringe should assist pollenation during warm weather. So soon as a fair quantity of fruits have set, diluted liquid manure may be given; avoid the production of sappy growth by an application of sulphate of potash. Should the sun be excessively bright after a period of dull weather it is advisable to lightly shade the houses to prevent scorching of the flowers

PLANTS UNDER GLASS.

By J. Coutts, Assistant Curator, Royal Gardens, Kew.

Begonia manicata.—This is one of the most useful and beautiful of the winter-flowering Begonias—a group of two-year-old plants having been in flower for over three months —and it is, perhaps, seen at its best in its second year. Well-grown specimens, in eight-inch or ten-inch pots, should attain a height of four to five feet and produce masses of rosy-pink flowers. It is increased easily by means of cuttings, which root readily at this season in a close case. They should be grown on in an intermediate temperature, and in their first year should make useful material for furnishing the stages; for this purpose they may be flowered in six-inch pots; they should then be grown on for the second year. The successful cultivation of this Begonia presents no difficulty, as it grows freely in any good potting compost. The usual mistake is to grow it under too warm conditions, at least, when it is in flower; during its growing season it enjoys an average temperature of 60°, but when in flower requires an ordinary greenhouse temperature.

Eupatoriums.—E. Raffillii, E. macrophyllum, E. ianthinum, E. petiolare and E. grandiflorum, which are all useful for winter and spring flowering, may be propagated by means of cuttings, which root readily in a close case with slight bottom heat. They are of easy cultivation, growing freely in any good compost in an ordinary greenhouse temperature, although E. Raffillii and E. ianthinum do better in an intermediate temperature during their growing period. With the exception of E. ianthinum, they all make good plants the first season. E. ianthinum is somewhat slower in growth, and is at its best during its second year. E. Raffillii and E. macrophyllum make huge specimens when grown on for the second year, the former being especially beautiful, with high inflorescences of purplish-blue flowers, the stems and leaves being covered thickly with reddish hairs.

FRUITS UNDER GLASS.

By T. Pateman, Gardener to Sir Charles Nall-Cain, Brocket Hall, Hertfordshire.

Early Vines.—Vineries in which the Grapes are approaching ripeness should be ventilated freely whenever the outside conditions are suitable. A dry, buoyant atmosphere is one of the main factors in perfecting the colouring of the berries, together with healthy root action and general cleanliness. Vines that are not overcropped should still develop lateral growths, which may be allowed to grow for a short time. If the vines are still free from red spider they should remain so until the bunches are cut, after which they may be kept clean by frequent heavy syringings late in the afternoon. On mild nights the top ventilators may be left open slightly, for a cool night temperature assists the colouring of the fruits; it also allows the excess of moisture to escape before the sun becomes powerful in the morning. When the Grapes are ripe the house should be ventilated freely day and night and the fruits should be watched carefully for signs of faulty or decaying berries, which should be removed.

Early Muscat Vinery.—Maintain a growing atmosphere in this vinery, especially now that the berries are swelling freely. Do not hesitate to remove some of the bunches if the crop is an excessive one, for if too many are allowed to remain the strain upon the vines may have a detrimental effect on them. While the berries are swelling the vines should be fed with liquid manure or a suitable vine fertiliser, while an occasional application of soot-water should assist materially in promoting the colouring of the berries. A night temperature ranging from 65° to 70° should be maintained, and when the day temperature reaches 80°, a maximum amount of air should be admitted.

Melons.—The first fruits should now be reaching maturity and care is necessary with watering, for an excess of moisture at this stage may cause the fruits to split badly; it is a good plan to mulch the soil to prevent excessive evaporation. Although care is needed with the watering-can, the soil should not be allowed to dry out, and the plants should not be shaded, for the sun has a marked effect on the flavour of the fruits. Top ventilation should be given night and day when the fruits begin to ripen, and the damping down of the floors late in the afternoon should cease, for a drier atmosphere is essential at this stage.

HARDY FRUIT GARDEN.

By T. E. Tomalin, Gardener to the Earl of Bessborough Stansted Park, Emsworth, Sussex.

Plums and Gages.—Timely attention to the work of stopping the young growths on wall-trained Plum trees is essential to the formation and maintenance of shapely and fruitful trees. On young fan-trained trees which have not yet covered their wall space, two growths should usually be allowed to extend at the end of each branch; one may be cut out later if not required, the other may be stopped when it has attained a length of eighteen inches. All other growths should be stopped at the fourth leaf to form fruiting spurs; those at the back of the branches should be rubbed off. Cordon trees should have one strong growth left at the top, and all other shoots stopped at the fourth leaf. It is not advisable to pinch out all the growing points on a tree at one operation, especially if it is carrying a crop, for the consequent check to the flow of sap may endanger the crop. The top half of the trees should receive attention first and the lower parts may be attended to a few days later.

Pears.—Cordon and horizontally-trained Pear trees on walls and fences may be assisted by the timely thinning and stopping of all the growths not required for extending the trees. The suppression of all unnecessary growth should divert the sap to the leading shoots which will be greatly strengthened. On horizontally-trained trees the leading shoot should be one proceeding from the lower side of the branch, because these tend to grow into line with the branch, whereas those on the upper side incline to grow upward at a right angle to the branch, and are often broken off in the attempt to bring them into line.

Gooseberries.—The fruits of these are usually preferred when quite small for cooking and bottling. When picking, the bushes should be gone over systematically, for by thinning the fruits on each branch regularly, the size and quality of those left to ripen for dessert purposes should be improved greatly. If show fruits are required, the thinning should, of course, be more rigorous than for the production of ordinary dessert fruits. Heavily-cropped bushes may be assisted greatly by an application of sulphate of ammonia at the rate of one ounce to the square yard, which should be watered in well if the weather be dry at the time.

THE FLOWER GARDEN.

By J. G. WESTON, Gardener to the DUKE OF DEVONSHIRE, Chatsworth, Bakewell, Derbyshire.

Planting Bamboos.—Although it is possible to transplant Bamboos at almost any time of the year in mild and damp localities, the present month is certainly the best time. Growth is now fairly active, and the roots have therefore an excellent chance of re-establishing themselves quickly and starting away without a serious check, provided that a reasonable amount of care and attention are given, more especially if a hot and dry period sets in, when they should be watered well directly the planting is finished and sprayed overhead at least once daily. The question of soil presents little difficulty in the average garden; if the staple soil is not suitable, holes should be dug about six feet in diameter and two feet deep; the bottom should be loosened to ensure ample drainage, and the hole nearly filled with a specially prepared compost. After planting, little more attention, other than an annual top-dressing of leaf-soil to keep the surface roots active, is required. Bamboos delight in a light, rich loam, and when preparing for planting, decayed manure and leaf-soil should be incorporated into the loam in equal parts to provide an ideal compost for them. Plants of moderate size in pots are usually supplied by nurserymen and are quite good if time is no object; if an immediate effect is desired, larger specimen plants are required, and special care should be taken that the roots are not exposed or allowed to become dry while out of the ground. When planting Bamboos, do not ram the soil, but merely press it moderately firm with the heel. Water them well and afterwards apply a mulch of light material, such as leaf-soil or spent Mushroom-bed manure. Although preferring moist conditions, Bamboos should not be planted in cold or badly-drained soil, or the roots may perish during the winter. Shelter from prevailing winds, especially from the north and east, is of primary importance for the Bamboo garden; in fact Bamboos should never be planted in exposed positions. The Bamboos are now divided into three sections, Phyllostachys, Bambusa and Arundinaria, and the varieties named under each heading have been found generally hardy and may be recommended.

Phyllostachys.—Some of the loveliest and most graceful Bamboos are found in this section. P. viridi-glaucescens makes a grand specimen and should always be included, as it retains its foliage throughout the winter. P. Henonis is a very graceful sort and of quick growth, whilst P. aurea is a strong grower of compact habit, and very hardy. P. Quilioi var. Castillonis is very distinct, its golden canes being especially noticeable; P. nigra is recognised easily by the pronounced colour of its canes, but it takes rather longer to become established than most; and P. violascens, P. Quilioi and P. mitis complete a selection of the hardiest and most effective.

Arundinarias. — A. Metake or japonica, although the most common, makes a fine specimen clump if plenty of space is available, and it also makes an excellent background for the finer varieties. A. anceps is a graceful variety which spreads quickly and makes an imposing group; A. nitida, the Queen of Arundinarias, is a small-leaved variety which loses its leaves early in the winter, but turns a beautiful yellow first and makes a charming specimen; it is a splendid plant for a prominent position in a large rock garden. A. spathiflora resembles the last-named variety, but is not of such upright growth. Other hardy Arundinarias are A. Fortunei, A. Hindsii, A. Hindsii graminea, A. aristata and A. Simoni. A. insignis, A. Falconeri, A. falcata and A. nobilis are beautiful kinds, but not hardy, and are therefore not suitable for planting outside except in the most favoured parts in these islands; they are grand subjects for winter gardens or large conservatories.

FOR NORTHERN GARDENERS.

By A. T. HARRISON, Gardener at Jordanhill Training Centre, Glasgow.

Insects.—A close watch should be kept on all subjects liable to attacks from aphides, as the recent spell of dry, sunny weather seems to have enabled them to increase alarmingly. Fruit trees growing against walls, and climbing Roses are amongst the first to be attacked, and these should be sprayed with a reliable insecticide, either on a dull day, in the late afternoon, or in the evening, when no damage should be caused to the tender young foliage. When Apple blossom buds show signs of attacks either by caterpillars or Apple blossom weevils, the trees should be sprayed with a poisonous compound. The weevils attack before the flowers are opened, while the codlin moth caterpillars should be dealt with soon after the fruits have set. It is not advisable to spray fruit trees when the flowers are expanded, especially if poisonous compounds are used, for there is always a danger of destroying those insects which are helpful at this stage in carrying the pollen from flower to flower.

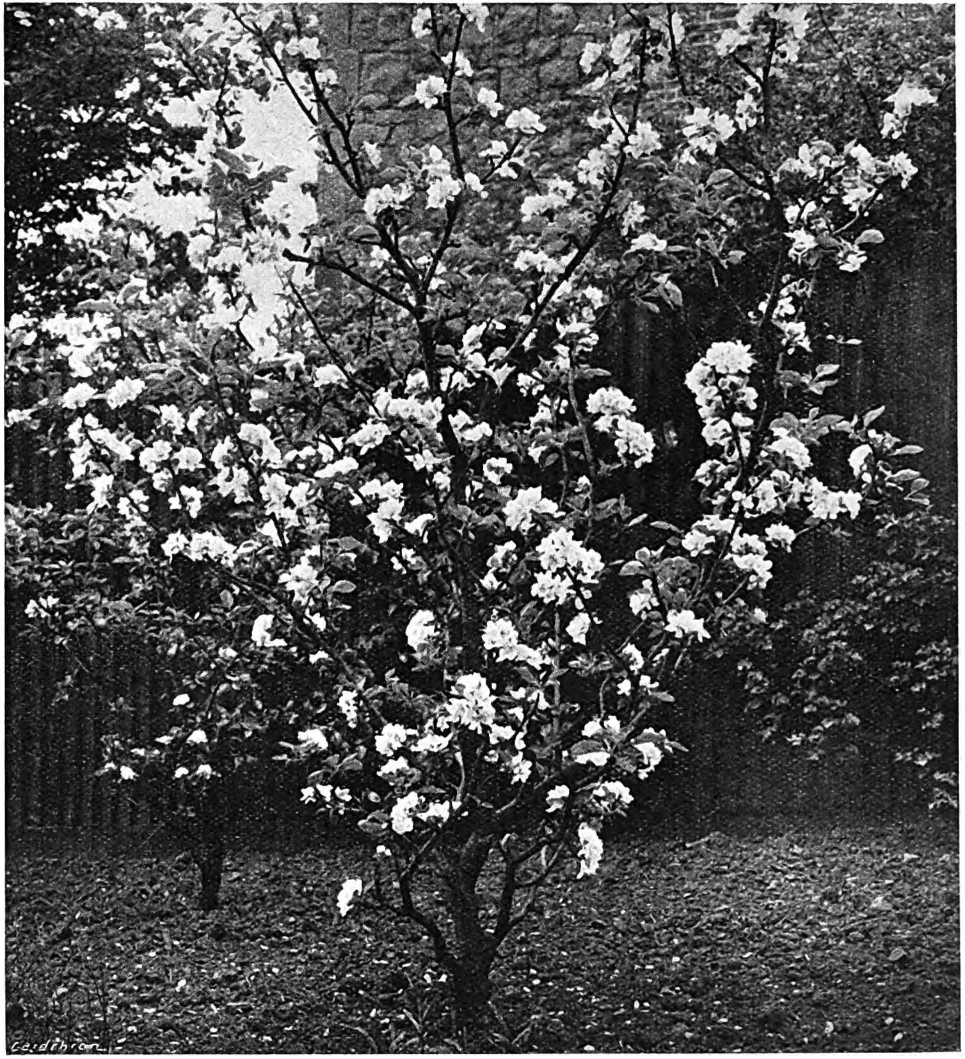


FIG. 166.—INTENSIVE APPLE CULTIVATION: THE SYSTEM AS APPLIED TO BUSH APPLES.

(see p. 356).

Herbaceous Borders.—Many plants are now growing rapidly, and such kinds as Paeonies, Delphiniums, Lupins, etc., should be supported with small branches or twigs around and amongst them. If this is done early, the growths soon grow between the stakes and practically hide them from view. All spaces between groups or plants, if not sown with annuals, should be kept stirred with the hoe. Herbaceous plants that were raised from seeds or cuttings last year, if not already planted in their permanent quarters, should be put in without delay, and the less hardy kinds, such as Lobelia cardinalis and Salvia patens may be planted without much fear of their suffering damage. Spaces occupied with late-starting subjects, such as Incarvilleas, if clearly indicated, should have the surface soil lightly pricked with a fork to facilitate growth.

Plants for the Greenhouse.—The time has again arrived when seeds of such plants as Cinerarias, Primulas and Calceolarias that are required for next season's display in the greenhouse, should be sown, and while the memory of those grown this season is still fresh, it should be easy to determine which varieties were most suitable. Any special Cinerarias may be raised from cuttings, while Primulas, if in good health, may be grown on for another season with excellent results, if potted into larger pots and carefully attended to during their growing season; many varieties of Calceolaria may also be increased by means of cuttings.

ALPINE GARDEN.

SILENE HOOKERI.

This beautiful Californian species was discovered about 1830 in Oregon, but was found at later periods both in Oregon and California. The flowers are fairly large, white, or tinged with rose-pink, and are interesting because each of the five petals is deeply divided into four narrow segments, thus adding to the elegance of a flowering specimen In *The Gardeners' Chronicle* of July 30, 1927, Silene Hookeri was described by Mr. Clarence Elliott, and his note was illustrated by a reproduction of a photograph of a plant growing in the alpine house at Aberuchill Castle, Perthshire. On Tuesday, May 8, Sir William Lawrence exhibited a pan of plants (Fig. 168) at the meeting of the Royal Horticultural Society, and received a Cultural Commendation.

As a plant for the alpine house, Silene Hookeri has established itself as a great favourite, and under such conditions its dainty blossoms are not soiled as they are sometimes when the plant is grown in the open rock garden. The flowers are somewhat fugitive, but they are borne in goodly numbers, so this weakness is scarcely noticed. In the white forms there is usually a rose-coloured stain at the base of each petal. Silene Hookeri is best raised from seeds. *B.*

POLYGALA VAYREDAE.

Coming as it does from the Royal Horticultural Society's Gardens at Wisley, the description of Polygala Vayredae (p. 317) is alarming. Is the plant hitherto known by that name something else, or has Mr. Grant White suffered that "slip of the pen" from which none of us is exempt? He writes of P. Vayredae as having "creamy-white wings and petals tipped with brown, changing to yellow." Farrer describes (*The English Rock Garden*) the blooms of this little Milkwort as "the most brilliant of all . . . . . . butterflies of flaming crimson with a body of gold," and this, I think, is generally accepted as the true description of the flowers by nurserymen and amateur gardeners. *A. T. Johnson.*

VERONICA TEUCRIUM DUBIA.

This brilliant alpine Speedwell, which has also been known as V. prostrata and V. rupestris, is one of those plants which have lost nothing by the invasion of newer subjects. It is still one of the best of the trailing, mat-forming species, not only in respect of the wonderful profusion of rich blue flowers which it produces, but because it has such a splendid constitution. It is a plant which anyone may grow to perfection with a minimum of skill and attention, and that amiability of temperament is an invaluable attribute. V. T. dubia has, moreover, given us a number of varieties in a wide range of blue shades, several of which have been named. Shirley Blue, Spode Blue and Royal Blue are among those, and it would not be difficult to secure plants affording a more graduated colour sequence from the palest azure to the deepest Gentian-blue. There is also a pure white variety, and one that is soft rose-pink. These, however, seem to lack the vigour of the type and those nearest it in colour, but with a little more care as to choice of position and treatment at the start they should give a good account of themselves and prove very worthy acquisitions.

There are also one or two kinds which are distinct in habit and size, being compact or very dwarf, and such plants are suitable for small rock gardens, stone sinks, or any confined position.

The most remarkable of this group, however, is the variety Trehane. Whether it actually belongs to the species under notice is questionable. It certainly has much larger leaves, and it does not trail after the manner of the type, but makes, instead, a tufted plant, more or less upright, with arching stems. However, this charming variety is usually listed under V. T. dubia. It is said to have originated in Captain Pinwill's famous garden, and is notable for the great beauty of its leaves which, being a rich yellow, afford such a striking yet harmonious effect with the brilliant blue of the flower spikes. This foliage is golden during the blooming period, which extends throughout May and June, afterwards assuming a greener hue. It is advisable to cut back the foliage of this variety to the base in early spring, or just when the new growths are breaking. As V. T. dubia Trehane grows to a height of some six inches and makes a mat at least a foot in width it should be no less charming in the front of the mixed border than it is in the rock garden. It is a plant of splendid vigour and reliability. *North Wales.*

SEDUM KAMTSCHATICUM.

It is undeniable that but few Sedums are considered as being among the élite of garden flowers. Probably this is mainly due to their culture being almost ridiculously easy, as a whole, and many keen growers despise them as unworthy of their care, while many of them are not at all showy. It is amazing to see the paucity of the numbers of the genus in even large collections of hardy flowers.

The Sedum under notice, S. kamtschaticum, is one of the valuable species which are held in little account by many, yet which has undoubted merits. It is now well-known to growers of rock plants, who value it for its late blooms and for the general appearance of its succulent leaves and orange flowers, together with its trailing habit, which gives it considerable value for the rock garden or the margin of the herbaceous border. It may be best described as a version of S. spurium, but with orange flowers.

This Stonecrop may be cultivated in sun or partial shade, but it prefers full sun, together with a light soil, where it may assume pleasing tints on its leaves and produce flowers in autumn. It may be increased by seeds, division and cuttings. A pretty variegated-leaved form, called S. kamtschaticum variegatum, is also obtainable, but does not come true from seeds. *S. Arnott.*

BULB GARDEN.

MUSCARI CONICUM AT KEW.

One of the principal attractions that delight the many who visit Kew at this season of the year are the Grape Hyacinths, Muscari conicum var. Heavenly Blue. These are situated on the slope to the east of King William's Temple. Actually, they are under the Hamamelidaceae collection, most of which are deciduous shrubs, and on this mound masses of blue Muscari show to advantage and may be seen from a considerable distance.

Nicholson gives Campagna as the habitat of M. conicum, while Weathers gives Trebizond. However, the variety Heavenly Blue appears to be the strongest and best of the many Grape Hyacinths now listed.

The bulbs were transplanted to their present position in 1921 from a position which they had occupied for some years; and they needed separating. Directly the foliage died down they were lifted and the best bulbs planted indiscriminately, but approximately nine inches apart and three inches deep. If merely scattered and covered where they fall a more natural effect is obtained.

The first season after planting, most of these bulbs flowered; some produced two or three flower scapes about a foot high, carrying dense racemes of fifty to seventy flowers, and the colony has since increased amazingly, so that as many as twenty flower scapes may be counted in some groups, although practically all the ground is covered with the flaccid foliage which is contemporary with the flowers. Naturally in this congested condition they are not so strong as formerly.

Bulbs were planted right up to the base of the trees and shrubs, evidently without ill effect, but these are not so strong as the others, and tend to make an undulated effect.

Planting the bulbs rather deeply ensures their safety against damage during the processes of hoeing and cleaning of the ground, for to keep them clear of weeds considerable attention is necessary.

As they begin to grow in late summer, care should be taken not to decapitate the young hidden growths with the hoe, and at this period it is beneficial to apply a light top-dressing of decomposed leaves and manure.

Other trees and shrubs that flower at the same time as Muscaris and which may be grown in conjunction with them produce pleasing effects, are Prunus Persica var. flore albo pleno, Magnolia stellata and Spiraea Thunbergii.

Early this year it was again deemed advisable to enlarge the area where the Hamamelidaceae are growing, and in February several Hamamelis plants were transplanted to lower down the slope. Before lifting the plants it was necessary to remove certain of the Muscari bulbs, and it was discovered that many of the original bulbs had multiplied so much that some of the clumps contained so many as four dozen bulbs of various sizes. These formed ready material to plant under the transplanted bushes in the extended area, and also to fill the spaces left.

Although the Muscari bulbs were molested at a time when the flower scapes were emerging from the bulbs, it is interesting to note that most of the newly-planted bulbs have flowered well and the single scapes compare favourably with those left undisturbed. *C. F. C.*

PRIMULA ACAULIS VAR. E. C. BUXTON'S DOUBLE-BLUE.

Most of the double Primroses being of old-time origin, the appearance of an entirely new variety in what has been pronounced to be a unique colour is an event of no small interest to lovers of this race of charming plants. The plant which has been called by the above name originated some four or five years ago in the late Mr. E. C. Buxton's garden at Bettws-y-Coed, the birth place of not a few notable treasures. Some seeds of the ordinary blue Primrose having been sown, the seedlings were treated in the usual way and a handful of the feebler ones discarded. Mr. Buxton, taking pity on these, planted them and one of them turned out to be this double blue. Incidentally, that story lends weight to the statement recently made in these columns that it is generally the Cinderellas and Tiny Tims of the seed-box which prove to be the most interesting departures from the type.

P. acaulis var. E. C. Buxton's Double-blue, however, has happily developed into a plant of robust constitution. The pale green leaves are rather narrower and longer, or more strap-shaped than those of most of the double Primroses. They are quite hairless on their upper sides, but downy beneath, and the mid-rib is a reddish purple. The flowers, borne on stalks of some six inches in length, are fully one-inch in diameter, and of a most delightful colour, which might be described as a Periwinkle-blue, rich and soft. They are slightly fragrant and fully double, so double, indeed, that even when the blossom is spent one can scarcely get a glimpse of the ancestral yellow at the base of the petals. The latter, which are slightly scalloped, or waved at the margins, are entirely free of any other colour, including white, a slight trace of purple appearing only when they are fading. The scapes which bear these comely blossoms are a subdued red. This colour also lines each angle of the pale-green, bell-shaped calyx, the clefts of which are unusually short and broad. This latest addition to an ancient and venerable race that once again enjoys a "wave" of popularity, is a most prolific bloomer. Even during last winter it was in flower shortly after Christmas in the open border, and that without any special attention. Since then it has maintained an almost unbroken succession of flowers, and when I saw it a week or two ago it was still flowering abundantly. *A. T. Johnson.*

HARDY FLOWER BORDER.

PYRETHRUMS.

Pyrethrums are numbered amongst our most beautiful herbaceous flowers, and whether the varieties cultivated be double or single, they make a bright show in the garden, while no flowers are more acceptable for table decoration.

For several years, I have been interested in the cultivation of Pyrethrums, and from experience I find that it is better to sow the seeds in a frame or cool greenhouse during early May. The seeds should germinate quickly under these conditions, and so soon as they have produced their first rough leaves, and have been thoroughly hardened off, they should be transplanted into nursery beds, four to six inches apart.

When selecting the seedlings of Pyrethrums it is by no means advisable to choose the strongest, as these frequently turn out to be inferior sorts. In October or November the plants should be transferred to their permanent quarters in the herbaceous border, the soil of which should have been dug to the depth of one foot, and manured at the rate of one hundredweight per ten square yards. Pyrethrums are perennial, but constitutional vigour may only be maintained by transplanting them every third year.

Many Pyrethrum seed mixtures, as sold, are of very high standard, but there is, of course, some uncertainty as to colouring, and those who desire to know exactly what they are planting may find the following selection of varieties not only vigorous but beautiful and free-flowering. Of double-flowered sorts, Lord Rosebery, scarlet; Queen Mary, rose with pink centre; J. N. Twerdy, crimson, tipped with yellow; and Mont Blanc, pure white, may be recommended. Among single-flowered varieties the best are Pink Pearl, Queen of the Whites, Mrs. Bateman Brown, crimson; Hamlet, pink; Elsie Gertrude, blush pink; and Oliver Twist, cream coloured. *Geo. H. Copley.*

BOG AND WATER GARDEN.

SAXIFRAGA PELTATA.

Of the many species of Saxifraga in cultivation, and their name is legion, this one is so distinct that several authorities have classified it as a separate genus. It is a handsome subject both in flower and foliage, and may be employed with advantage in furnishing the margins of ponds and streams, for it is a moisture-lover and revels in deep, loamy soil; when established it need not be disturbed for a number of years.

S. peltata forms a thick, fleshy root-stock, from which, during April and early May, arise rather stout, erect stems, tinted red and downy, to a height of about two feet; these are terminated by compact heads, four or more inches across, of flowers varying in colour from white to rose-pink.

As the flowers fade, the large, bold leaves commence to appear, and these are very handsome, making this Saxifraga as useful a foliage plant throughout the summer as it is a flowering subject in the spring. The leaves, which are produced in large numbers on stout stalks about three feet in length, are bold in outline; they are target-shaped, about eighteen inches across, and rich green.

Saxifraga peltata is a native of Sierra Nevada, in California, where it grows plentifully on the margins of streams and sometimes in the water itself, or in woodlands. It is quite hardy in this country and may be increased by division or raised from seeds, which it produces abundantly during warm seasons. A fine, handsome subject, it is eminently suitable for producing bold effects by the waterside.

This striking species, which was first discovered by Hartweg, is well figured in the *Botanical Magazine*, t. 6074. *M. W.*

FLOWER GARDEN.

STANDARD HELIOTROPES.

Heliotropes are not so extensively cultivated as they deserve, for their requirements are simple and for scent and beauty the flowers are unsurpassed.

Cuttings should be struck during the spring in sandy soil in a warm case, and so soon as they have rooted, should be potted into sixty-sized pots and placed in a temperature of from 60° to 65°, near the glass. When well established, they may be repotted into five-inch pots, using a fairly light compost. Keep them syringed well daily, and as they begin to grow stake them with canes about three feet long; keep all side growths pinched out until the required height is obtained, when they should be stopped to induce them to break. When the fresh growths have made about three pairs of leaves, re-pot them into twenty-four-sized pots, using a compost of fibrous loam and leaf-soil, with a good sprinkling of old mortar-rubble or coarse silver sand. When they have become established in these pots, and all attention has been paid to stopping, tying, etc., harden them off gradually prior to planting out. While out-of-doors, see that they do not suffer for want of water, while an occasional application of a good fertiliser should assist them greatly.

About September, the plants should be lifted carefully and placed in the smallest pots possible, without removing too much soil or injuring the roots. Place them in a cool Peach house or Vinery, and allow them sufficient water to keep them from shrivelling. I am not an advocate of drying these subjects off, as recommended for Fuchsias. In February, give more water, and keep all flower spikes pinched off until the plants are ready for planting out again. *E. Baker.*

PLANTS NEW OR NOTEWORTHY.

A HYBRID MECONOPSIS.

The ever increasing circle of Meconopsis enthusiasts may be interested to have particulars of a remarkable plant which is flowering in the garden of W. Arthur Dewhurst, Esq., at Stanley, Perthshire.

For the past few years a bed in the garden has been devoted to mixed groups of Meconopsis integrifolia and M. simplicifolia, Bailey's form, a combination of blue and yellow which appeals to many cultivators of this genus. From seeds saved three years ago from M. simplicifolia growing in this bed, the plant illustrated (Fig. 167) appeared. When quite small it seemed to differ from its fellow seedlings, and its development has been carefully watched.

There is every indication that this plant is a hybrid between the two species mentioned. The leaves are intermediate in form, much more hirsute than those of M. simplicifolia. The flowers are over six inches across, of a light cream colour, and are borne on single stems, with no trace of a central stem, as is seen in M. integrifolia.

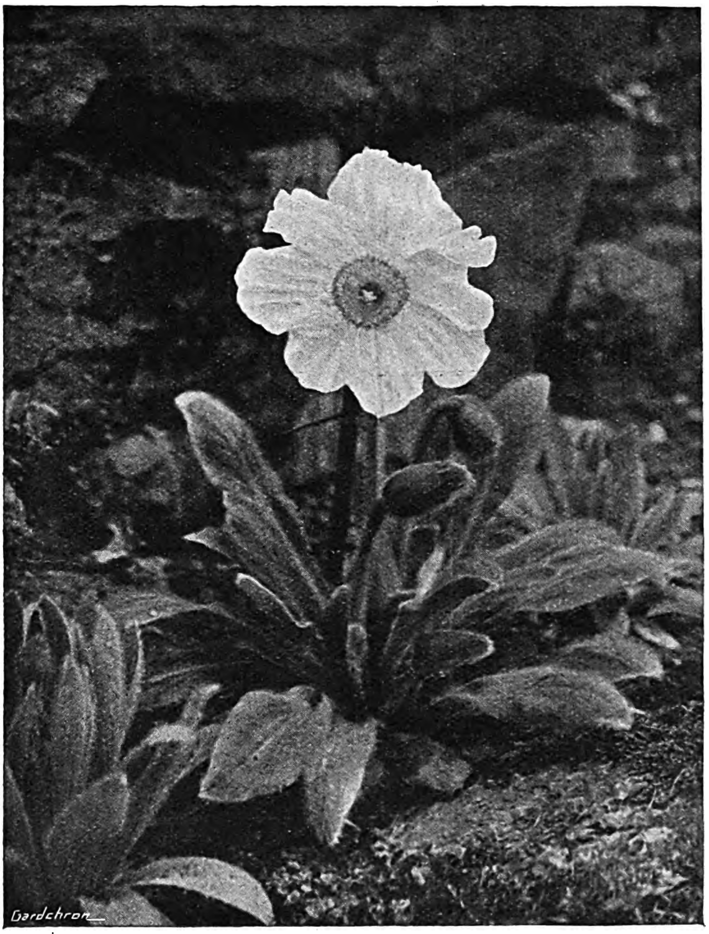


FIG. 167.—A HYBRID MECONOPSIS.
M. simplicifolia, Bailey's var. × M. integrifolia.

This plant greatly resembles that described by Mr. Harley in *The Gardeners' Chronicle* of July 23, 1927. I have had the opportunity of seeing both plants, and would hazard the opinion that both are of hybrid origin. Mr. Dewhurst's plant is dwarfer, the flower of more substance and of bolder form, and the leaf somewhat more hairy. They resemble each other in floral colour.

It should be interesting to see whether Mr. Dewhurst's plant will produce seeds, but on examination of the plant on May 1, when there were four expanded flowers, a careful search failed to show any trace of pollen. There was, however, a well developed side-growth, so there is a chance that it will prove perennial, as is the case with Mr. Harley's plant. *Fredk. Brooker, Aberuchill Gardens.*

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THE GENUS PRIMULA.

WHEN Pax published his Monograph on Primulaceae* only the first wave of the incoming tide of Chinese and Tibetan Primroses had broken on our shores, and neither he nor students of the genus in Europe had then more than the merest inkling of the flood of new species which was soon to overtake them from western China, and especially from Yunnan. At that time the Himalayas were thought to be Nature's nursery of Asiatic Primroses; botanically, the country between the western end of the Himalayas and China was a *terra incognita*, and although rumours of the unparalleled floral richness of western China began to circulate in this country on Wilson's return from his first expedition, they had not crystallised on the genus Primula. The character and extent of the exploratory work done by David, Delavay and other pioneers was not then appreciated outside herbaria.

In the eight years' interval between the publication of Pax's Monograph and the R.H.S. Primula Conference in 1913, British explorers—Wilson, Purdom, Forrest and Ward—had sent home a mass of new material. This reached the hands of Professor Bayley Balfour, as he then was, and in his consideration of it that discriminating botanist found the arrangement of the sections proposed by Pax for such of the Himalayan and Chinese species as were known to him, too inelastic to accommodate much of the new material.

Bearing in mind the then approaching Conference on Primulas, Balfour therefore prepared a fresh enumeration of the sections dealing with Chinese Primulas as they were then (1913) known, and in view of the numerous species unknown to Pax, he found it desirable not only to modify the latter's grouping of the species but to introduce new sections. Some idea of the magnitude of Balfour's task may be gleaned from the fact that he had to deal with nearly 300 Primroses—ninety more than were known to Pax in 1905, and of this total the Chinese species had increased from 88 to 140! No one knew better than Balfour, however, that in his self-imposed task he was sailing in seas only partially charted, and like the wise pilot he was, he made it clear that his revision of Pax was tentative, and for that reason delayed the preparation of a key to it. Later on, as more and more material reached his hands from western China, Balfour modified the views to which he had given expression in the paper prepared for the 1913 Conference, and made the general drift of these modifications known from time to time. Had he lived, Balfour would undoubtedly have dealt with the genus as a comprehensive whole, but new material was still coming in thick and fast when failing health forced him to resign his post; so that even had his overtaxed strength permitted, finality could not then have been reached.

It has come about, therefore, that fifteen years after Balfour's provisional revision of the genus, it finds itself, not, indeed, in a state of confusion, but in need of further revision; and if we bear in mind the mass of Asiatic material discovered since 1913 by Forrest, Farrer, Ward, Handel-Mazzetti and others, there is nothing for surprise in this. Whether finality is yet in sight is a matter for the adventurers to whom science and gardening owe so much, but unless fresh sources of material come to light it must obviously be a good deal nearer than it was in 1913.

In the view of Sir Isaac Bayley Balfour's successor at Edinburgh, the accumulation of novel material and the accessions to our knowledge of the Asiatic section of the genus, justify a further revision, and the approach of another Conference on Primulas affords an appropriate opportunity for it. With the collaboration of Mr. Forrest, whose knowledge of the western Chinese and Tibetan Primroses in the field is unique, Professor Wright Smith has published a revision of the genus which brings our knowledge of it to the present time; and assuredly no revision could have been prepared under happier circumstances—an association of science and field experience working together.

In Wright and Forrest's revision it has not been thought desirable to retain all the sections created by Balfour in 1913,* and some have been absorbed in greater aggregates. Auriculatae, for instance, is replaced in Farinosae, as Pax had it, and Elongata is absorbed in Nivales. Gemmifera, Glacialis (in part), Sertulum and Yunnanensis all fall into Farinosae, while Geranioides and Mollis are absorbed in Cortusoides and Chartacea, and Davidi and Sonchifolia merge into Petiolares.

Of the twenty-one sections into which Pax grouped the genus, four—Auricula, Bullatae, Carolinella and Vernales—remain as he left them in their general scope; Pax's Soldanelloidae is modified as to character; some are retained as sections but with modified names—among them Malacoides for Monocarpicae, for instance; some sections are withdrawn and Omphalogramma is made a genus to itself.

The substance of the revision is that the twenty-one sections of Pax's Conspectus are increased to thirty-two, while the forty-two sections proposed by Balfour are reduced to the same total. The list of sections is as follows, and it will be seen that it includes no new names:—

Amethystina.
Auricula.
Bella.
Bullatae.
Candelabra.
Capitatae.
Carolinella.
Cortusoides.
Cuneifolia.
Denticulata.
Dryadifolia.
Farinosae.
Grandis.
Malacoides.
Malvacea.
Megaseaefolia.

Minutissimae.
Muscarioides.
Nivales.
Obconica.
Obtusifolia.
Petiolares.
Pinnatae.
Pycnoloba.
Reinii.
Rotundifolia.
Sikkimensis.
Sinenses.
Soldanelloideae.
Souliei.
Vernales.
Verticillata.

In the key, the sections are grouped in two main divisions—Involutae and Revolutae—based respectively on the inward and outward folding of the young leaves, and as only two sections—Auricula and Verticillata—are included in the first, it follows that most of the sections fall into the second division. These are subdivided into three main groups, Campanulatae, Efariniferae and Fariniferae.

On the whole, the characters used to determine the sections are definite and appropriate; occasionally the authors have found themselves faced by difficulties familiar to botanists intent on the preparation of a key. Fariniferae, for instance, includes sections in which several species are free or almost free of farina, such as P. cuneifolia, several of the Candelabra group and a few of the Farinosae group, but notwithstanding their lack of farina, their affinities in other ways are obviously with farinose species, so they are placed with them. On the other hand, all the species grouped under Efariniferae, without exception, are lacking in farina.

In dealing with the species, the authors observe that in the Efariniferae the lack of farina is correlated with "other relatively strong characters of which the sum makes discrimination reasonably certain." Even in the groups of species more or less farinose the character is a variable one in the same species. In the section Candelabra, for example, the species rarely have farina on the leaves; on the other hand, the leaves of Primroses of the Nivalis group are rarely without it; in doubtful cases, "its final stronghold is to be looked for at the apex of the scape, on the bracts, pedicels and at the base of the calyx."*

A curious character noticed by the authors of the revision concerns the dehiscence of the capsule in the section Petiolares. As is known, the capsules of the majority of the genus open at the top by a series of teeth, the degree of splitting varying in different plants. In the section Petiolares, the capsule is globose and very adherent at the base of the lower part of the calyx. An unusual point about it is that the apex of the capsule is often so transparent that the seeds may be seen inside before the capsule opens. In nature the apex is like a transparent cap which tends to dissolve or crumble away, while the seeds, packed on a convex placenta, are washed out by the rain. Incidentally, these seeds seem to lose their power of germination rapidly, with the result that only a portion of this large section has been brought into cultivation. The authors do not attempt to establish any connection between the transparency of the cap and the rapid loss of germinative power, but it is possible the action of light rays may have some bearing on it.

The Candelabra group of Primroses is probably more amenable to cultivation in Britain than the rest, for it includes species which are easy enough to handle, such as P. Beesiana, P. Bulleyana, P. burmanica, P. Cockburniana, P. helodoxa, P. japonica, P. Poissonii, P. pulverulenta, and P. serratifolia—a goodly list. The authors point out that all the members of this section do not have the tier-upon-tier inflorescence from which the section derives its name, nor do all species with this character of inflorescence belong to the Candelabra section.

Students will be interested to find that while Pax's section, Capitatae, is retained in preference to Balfour's Sphaerocephala, P. denticulata is separated from it and placed at the head of a section—Denticulata—of twenty-one species and sub-species; Capitatae now includes only the well-known P. capitata, Hook., with five sub-species, including P. Mooreana, grouped round it. The section lies between Denticulata and Muscarioides, in which the inflorescence is more or less spike-like and the individual flowers pendent on the spike. To unobservant folk, the carriage of the flowers on the spike may seem a trifle, but it is a good character for botanists; in Capitatae they are also pendent, but in a round-headed, erect inflorescence, and in Denticulata the inflorescence is usually a dense, many-flowered head in which the flowers tend to an erect position; it is this latter character which is used to distinguish the Denticulata section from Capitatae and Muscarioides. The distinction is a thin one, however, and as the authors observe, there is probably no clear divisional line between Capitatae and Muscarioides. The example of the latter section most familiar to cultivators is P. Littoniana, although

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* Pax, F., and Knuth, R., in Engler's *Das Pflanzenreich* Heft 22, *Primulaceae* (1905).

* *R.H.S. Jour.* XXXIX, p. 131, 1913.

* *Notes* from the Roy. Bot. Gard., Edin., No. LXXVI, p. 9, 1928.

P. deflexa, P. Giraldiana and P. pinnatifida are no strangers to gardens, nor P. Menziesiana and P. cernua to cold greenhouses.

The section Nivales, of Pax, has been so swollen by the discoveries of explorers that its numbers have been increased from fifteen to fifty-five, with many sub-species. The section is at once, perhaps, the most desirable and certainly the most intractable of all, and so far the out-of-door cultivation of only a fraction has been mastered in Britain. Of these P. chionantha and P. Maximowiczii are the only species at all familiar. The famous, if hitherto elusive, P. Agleniana, belongs to this section, and P. muliensis as well. Petiolares is another large section of which only one species—P. Winteri—is generally known in cultivation, but six of the nine species forming the section Sikkimensis are well-known.

Consideration of this authoritative enumeration cannot but bring home to cultivators the relative disproportion between the number of Primroses known to science and the number in cultivation or ever likely to be in cultivation out-of-doors in Britain. On the other hand, it would be unwise to set a limit to the number which can be successfully grown in a cold house.

The authors' recognition of Omphalogramma as a genus distinct from Primula is a return to the arrangement proposed by Franchet, who originated the generic name. Eleven species have been described, and of these O. vinciflorum is probably better-known here than the rest; but cultivators are still in the dark as to the handling of the species generally, and it promises to be troublesome. Whether it is worth while is a point which time alone can show.

The authors are to be congratulated on the conclusion of an exceptionally onerous task which, over and over again, has called for the exercise of critical judgment and a keen but discriminating sense of the value of criteria in the determination of species, sub-species and their grouping. They number more than five-hundred-and-thirty. *A. Grove.*

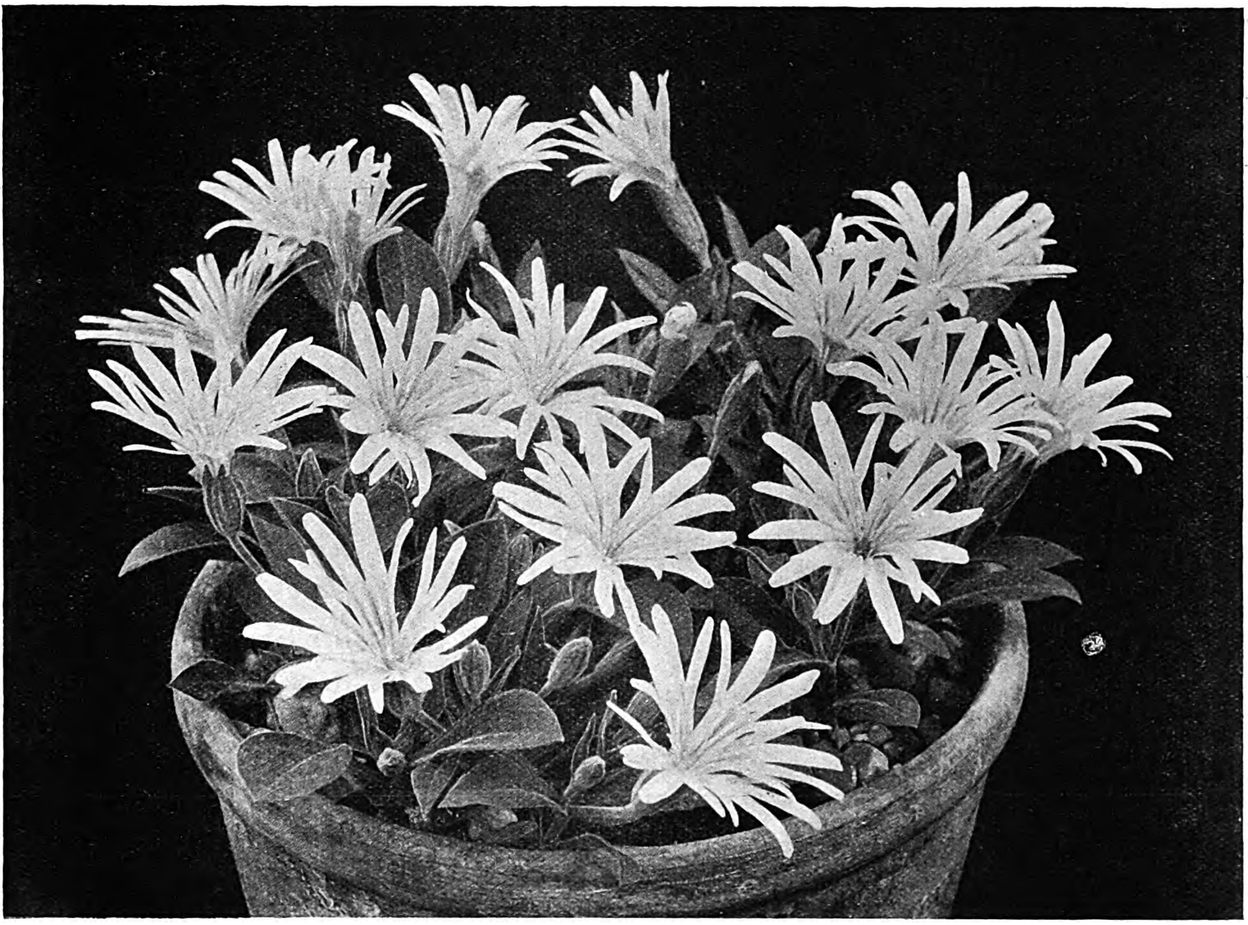

FIG. 168.—SILENE HOOKERI.
(see p. 352).

TREES AND SHRUBS.

OSMANTHUS DELAVAYI.

Of the eight known species of Osmanthus, five have been introduced at one time or another, as well as a hybrid of Japanese origin. O. Delavayi differs from all of them in the small size of the bush, the small leaves and the great length of the tube of the corolla. This long tube was not admitted when the *Genera Plantarum* was published, for the genus was described as having a short tube, while here it is half-an-inch long. O. Delavayi did not reach this country until 1904, and was too late to be included in the generic description.

Another species exceptional in its structure is O. sandwicensis, in having four stamens, but this has never been introduced. In other respects O. Delavayi agrees in having two stamens, opposite, evergreen leaves, and a delightful fragrance, which seems to be an attribute of the flowers in all the species, as indicated by the generic name, *osme*, smell, and *anthos*, a flower.

The leathery leaves remind one of some of the species of Vaccinium, such as V. ovatum, but they are curiously speckled with dark green beneath on a pale ground.

According to the state of the winter, this species may flower at any time from February to April. Owing to its compact, dwarf habit and slow growth, it is well adapted for planting on rock gardens to give them character, or distinctiveness. A bush now flowering at Westonbirt, Gloucester, may have been one of the earliest planted, for it is about two-and-a-half feet high. *J. F.*

CEANOTHUS RIGIDUS.

It is with no little satisfaction that one is able to add further testimony to an opinion long held that this fine species is hardier than it is generally believed to be. This is not only the result of my own experience, but of others in various parts of the country during the past severe winter. My oldest specimen is on a north-west wall, and although many of the branches extend round a draughty corner where they get a full measure of the cutting easterly winds, neither the leaves nor the tips of the shoots have been injured. The frost registered here was up to twenty-two degrees.

C. rigidus is a native of the hills of south and central California, but it extends northwards at least so far as Monteray, from whence it was introduced by K. T. Hartweg, when collecting for the Royal Horticultural Society in 1846-7. In this country it is a shrub of some six to ten feet, or even more, in height. As the specific name implies, it has a stiff and rigid habit of growth, the wood being tough and the laterals comparatively short, thick and blunt. The evergreen leaves with which the branches are densely furnished are from one-quarter to nearly one inch long; they are wedge-shaped, toothed and decurved at the apex, and dark glossy green. The young wood and the underparts of the foliage are downy.

C. rigidus is the earliest to flower of the species grown here, the first blooms often opening at the end of March, from which date a succession is maintained for at least two months. Individually, the flowers are one-eighth-of-an-inch across, and they are borne in closely-set umbels about the size of a shilling. They are rich lavender-purple, approaching violet in colour; the anthers being lemon-yellow, and as all the twigs are often densely crowded with a heavy crop of blooms, a well-grown specimen is one of the most strikingly beautiful of all spring-flowering shrubs. Owing to its rigid habit and the shortness of its lateral growths, C. rigidus makes an ideal wall subject. It may be propagated from cuttings taken in the later summer; growth is at first slow, but so soon as it is established the plant increases rapidly in stature. *North Wales.*

NOTICE OF BOOK.

The Gardens of Japan.

Just as manners differ in different times, so tastes vary with peoples and climate, and especially so in regard to gardening. Nevertheless, as gardeners in other lands endeavour to reproduce the old-English garden and the English Rose garden, so we also endeavour to reproduce the garden scenes loved by other peoples.

When it was discovered that Bamboos were hardier than had been anticipated, many British gardeners set about the making of a Japanese garden, and some of the results were incongruous. More recently, a better knowledge of the art of gardening in Japan has resulted in great prominence being given to Japanese gardens in the British Isles, and with happier results. The fine Japanese garden arranged by Messrs. James Carter and Co., at the International Horticultural Exhibition of 1912 helped to popularise this form of garden-making, and now in many private and some public establishments the Japanese garden is an attractive feature.

In Japan, the creation of a garden is a matter of enthusiastic, almost religious, care. Every stone, tree and plant has some meaning, and there is a right place for each. Japanese gardens are of many types and varieties—a matter not generally recognised in Great Britain. But there is no excuse for this lack of knowledge now that Mr. Jiro Harada has given us *The Gardens of Japan.** In this beautiful book the author has been economical in regard to text, and prodigal in the matter of illustrations, and has to a large extent allowed the pictures to tell the story of gardens in old and new Japan. He deals all too briefly with the history of garden art in Nippon, referring to the Nara (781 A.D.), Heian, Nambokucho, Momoyama and Edo periods, which bring the story down to the restoration in 1868. He tells us that "by the proclamation of 1873 the establishment of parks was encouraged throughout the country, Tokyo first setting an example by promptly creating Asakusa Park, Shiba Park, and Uyeno Park, in succession. The example was immediately followed by Mito with Tokiwa Park (or Kairaku-en), Kanazawa following the next year with Kenroku Park and Takamatsu with Ritsurin Park the year following. Some years later, Koraku-yen of Okayama was opened to the public. Hibiya Park in Tokyo was the first of the parks specially created as such from a plain piece of ground in 1903, and Suwa Park of Nagasaki was the forerunner of the one that took advantage of natural scenic beauty in the creation of the park, though already in the feudal *regime* parks had been so made at Shirakawa and Mito, as already referred to. Others throughout the country slowly followed these examples. With the importation of European civilisation garden parties became a vogue among the wealthy, and turf was introduced into our gardens without much jarring the harmony with the traditional forms. Moreover, with the building of European houses came gardens of Western style, though they have not made much headway. As a reaction against intoxication with things foreign, *cha-no-yu* was revived, which helped to retain refinement and Nippon taste in our gardens. The great earthquake and fire of 1923 revealed the efficacy, or utilitarian side, of our gardens in Tokyo. Tens of thousands of people took refuge in large gardens throughout the city and saved their lives. In some instances, all the trees in the garden were burned to the ground, but many lives were saved through the ponds. In no fewer instances did the gardens check the havoc of the sweeping conflagration, and hundreds of houses behind them escaped destruction. These facts are bound to influence our gardens in future."

Historical references are followed by descriptions of the different styles of Nippon gardens and some of these types are illustrated by clever drawings, in each of which the main features are numbered or lettered, with corresponding descriptions below. From these it is possible to gain an insight into the principles underlying Japanese garden design. For instance, the tea garden, although small, "should never be ornate, and though it must conform to the rules of *cha-no-yu*, it must not be artificial. It must look natural. More than that, it must be so made as to arouse sensations in harmony with the spirit of tea and conducive to a meditative frame of mind. Once in it, one may feel a detachment from the world, away from the hustle and bustle of life." Although as a people we are steeped in gardening, it is doubtful whether the matter-of-fact Britisher will aim at creating in such a garden "the solitude of a newly-awakened soul still lingering amid shadowy dreams of the past, yet bathing in the sweet unconsciousness of a mellow spiritual light, and yearning for the freedom that lay in the expanse beyond."

The chapter on Garden Parts and Accessories will be particularly helpful to those who propose to create a Japanese garden or desire to bring an existing garden into line with the Japanese spirit. Cascades, streams and springs, lakes, islands, bridges, stepping stones, pavement, sand, trees and plants, walls, lanterns, pagodas, arbours, gates, fences, garden care and winter decorations are all dealt with in pleasingly intimate and loving fashion.

Mr. Harada's conclusion is charming, and in the final paragraph he points out that the Japanese "natural characteristics demand in our garden something to satisfy our aesthetic taste, which delights in the subtle beauty of the inconsistencies of life and in 'a tender attempt to accomplish things possible in the impossible thing we know as life.' We strive to be natural with our gardens, and crave to satisfy our yearning for Nature. In them we emphasise the charm of restrained quality and of concealing beauty so that it may be discovered, giving that thrill of joy to the soul which comes from doing a good deed in stealth to have it found out by an accident. Thus, at least in its ideals, our garden by no means stops at merely creating and arranging beautiful spots, but aims to be natural, in order to give peace and rest, and be a fitting abode in which the soul can wander and find nourishment."

Then follow one-hundred-and-forty pages of beautiful illustrations of Japanese gardens, from those of the Nambokucho period (1336-1393) to those of modern design. A few that make strong appeal to ourselves are the gardens Sanbo-in, Daigo; Joju-in, Kyoto; Imperial garden at Shinjuku, Tokyo; Mr. Honda's garden at Hamamatsu; Mr. Fujita's garden at Kyoto: Mr. Inahata's garden at Kyoto; Shoren-in, Kyoto; Kaisando, Tofukuji; Viscount Shibuzawa's garden at Tokyo, and the gateways in Baron Masuda's and Mr. Nakamuras's gardens.

The printing and general get-up of the book are entirely praiseworthy, but we would urge those who procure a copy to obtain one bound in cloth instead of in a paper cover.

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* *The Gardens of Japan*, by Jiro Harada. The Studio, 44, Leicester Square, W.C. 2. Price, cloth bound, 10/6; wrapper, 7/6.

INDOOR PLANTS.

BROWALLIA SPECIOSA MAJOR.

A stock of this beautiful perennial Browallia may be raised easily from seeds, sown from January to early May. These, if sown thinly in well-drained pans or boxes containing a light, sandy compost, and given a temperature of from 60° to 70°, should soon germinate. When the seedlings are large enough to handle, prick them off into three-inch pots, placing three seedlings in each; keep them well syringed and shaded from all bright sunshine until established, when the points of each plant should be removed to induce them to break and form even, well-balanced plants. So soon as the new growths have started, repot the plants into four- or six-inch pots, according to requirements. They make much better specimens if the three plants are potted on intact. Feed them liberally with liquid manure about once a fortnight, and when they are well established vary this treatment with an occasional dose of weak soot-water to improve the colouring of the leaves.

After they have flowered, shorten back the old growths to within four inches of their base and gradually withhold the water, keeping them well syringed until new growths appear; these, as they become long enough, may be inserted as cuttings. If afforded every attention they should make fine specimens for flowering from November to January.

Browallias are seldom attacked by insect pests; thrips sometimes put in an appearance and may be eradicated easily if the house is fumigated every two or three weeks. The blue-flowered Browallia elata, and its white form, are half-hardy annuals, and may be used for edging purposes, or as dot plants for the front of the herbaceous borders. *E. Baker.*

NIDULARIUM MEYENDORFFI.

The long, strap-shaped leaves of this Bromeliad are arranged in a regular vasiform manner and are decidedly ornamental; the leaf-margins are finely toothed, and the leaves themselves have a bronzy hue which is quite attractive. The flowers are borne in a dense cluster in the centre of the crown, but being short-stemmed they are not readily discernible. The central leaves, however, which are considerably shorter than the outer ones, acquire a brilliant scarlet colour during the flowering period, and remain in good condition for several months.

N. Meyendorffi is a very desirable and ornamental occupant of the stove. After the flowering period it produces suckers freely, and propagation is effected by this means.

LOBELIA TENUIOR.

A native of Western Australia, this charming half-hardy annual is an excellent subject for growing in pots to furnish the stages in the conservatory or greenhouse. It is of upright habit and attains a height of about one foot. The flowers are borne on slender peduncles; they are three-lobed, about one inch in diameter, and of a pleasing, bright blue colour, with a white eye.

To obtain a succession of flowering plants, seeds should be sown in batches during the spring and early summer, pricking off the resultant seedlings into four- or five-inch pots, three or five seedlings being placed in each receptacle. The earlier batches should be grown on a shelf near the glass in a cool house, but later a cold frame should give sufficient protection and the lights may be drawn off during mild weather so that the plants may be kept as sturdy as possible. Applications of diluted liquid manure and soot-water are beneficial when the pots are full of roots, and the plants remain in good condition for a considerable period if they are given proper attention. *T. H. Everett.*

A NEW INTENSIVE SYSTEM OF COMMERCIAL APPLE GROWING.

(*Concluded from p.* 341).

The System as applied at Brockley.

The trees are planted as maidens, which enables them to be cut at any desired height. It also ensures the tree obtaining a firm root-hold before the top has become large, and so does away with the need of staking and wiring. The tree is self-supporting from the start.

The distance the trees are planted from one another, and the distance from row to row, depends on the strength and habit of the variety. The ideal to be aimed at from tree to tree is such a distance that, when the tree is fully grown, the side branches just fill the space without having been unduly hard-pruned. If a greater distance is given, space is wasted; if less, the necessary hard-pruning greatly delays the fruiting period. From row to row one wants to have as small a space as possible, but there should be room for single horse cultivation for two or three years. For a medium grower, such as Cox's Orange Pippin on Paradise (type 2), six feet by three feet has proved suitable. Other varieties suiting this spacing are Early Victoria, Stirling Castle and Worcester Pearmain. For a stronger grower, such as

Beauty of Bath, seven by four is advisable. The system is therefore especially suited for moderate growers, although it is also applicable to stronger ones.

The trees are planted in the usual way. It has been shown by Pickering and others that no special care for the roots need be exercised when dealing with the Paradise stock. The roots are, of course, not bunched up, but beyond that, and insistence on firm planting, no especial precautions have been taken, and the trees have, in practice, shown no sign of resenting this treatment.

First Winter Treatment.—The first pruning may take place soon after planting, although it is probably preferable to delay this to the early spring, when the buds are just starting. The height to which the maiden is cut is approximately knee height, but some variation from this is often made, depending on the variety and strength of the tree. In the spring one knife edge ring is sometimes made in order to increase the number of lateral shoots from the main stem, but the procedure is somewhat risky so soon after planting, in the hands of the inexperienced. No further attention as regards pruning is needed during the first summer.

Second Winter Treatment.—In the second winter the tree consists of the original maiden portion from which are borne a vertical leader and more or less horizontal lateral shoots. The leader (called a main stem leader, to distinguish it from leaders of lateral shoots subsequently to be described) is pruned to a length of between six and eighteen inches. The actual length at this early stage of the tree is usually about one foot, but the best amount to leave depends greatly on the strength of the tree and on the variety. It is important to cut to a bud which, on growth, will tend to bring the new leader centrally placed over the butt of the tree. Leader shoots are rarely quite vertical and consequently this directional pruning affords a means of keeping the future main stem of the tree approximately vertical. This is important, since at the close distance employed in planting any leaning of the tree tends to interfere with cultivation.

The lateral shoots are pruned where possible to about nine inches, to a downwardly directed bud. The actual details, however, vary with the variety and the tree in front of the pruner. The use of a downwardly directed bud is important. Lateral shoots have a tendency in most varieties to leave the main stem at a smaller angle than ninety degrees; in other words, they tend to grow obliquely upward, and the use of the downward bud tends to correct this. It is, of course, a horticultural axiom that spurs are developed more easily on horizontal than on vertical wood.

The young tree now consists of a lower tier with three or four short radiating branches, and an upper tier of the main stem leader. (See lower portion of trees in Fig. 163, p. 341).

Second Spring Treatment.—In the second spring knife-edge ringing is an important, and indeed, an essential practice. The object, as before stated, is to induce the growth of lateral buds into lateral shoots where, without the process, only spurs would be formed. In varieties such as Cox's Orange Pippin, the method is only used on main stem leaders. The actual operation is simple and speedy. The knife used should be of moderate size, with a smooth handle to avoid chafing the fingers. The edge of the blade is placed about midway in the internode above the spot at which it is desired to produce a lateral, the wrist is brought well round so that the blade is directly in front of the operator. It is then pressed firmly round the shoot till, by a further action of the wrist in the opposite direction, a complete ring is made. In this operation no tissue is removed. It is important for the novice to practice the correct method, as it enables the operation to be very speedily performed, the time occupied not being more than one second. When large numbers are being done, speed is, of course, essential.

Second Summer Treatment.—During the second summer the upper (second) tier is, by reason of the knife-edge ringing, producing numerous lateral shoots. The lateral shoots of the lower (first) tier are also, of course, growing. They require a little attention in the summer. The terminal bud (*i.e.*, the downwardly directed one) is allowed to grow and to form the lateral leader. The second bud also grows into a shoot, but as it is not wanted as a leader, it has to be changed into a spur. For this purpose the modified Lorette summer pruning (described in a paper by Barker and Lees) is used. This consists of pruning to two good buds about the third week in July. The result of this, together with subsequent treatments described in that paper, is that the shoot ultimately becomes a spur, or short-shoot, bearing spur buds. The buds behind the first two usually develop naturally into spurs or remain weak. In either case they require no further treatment.

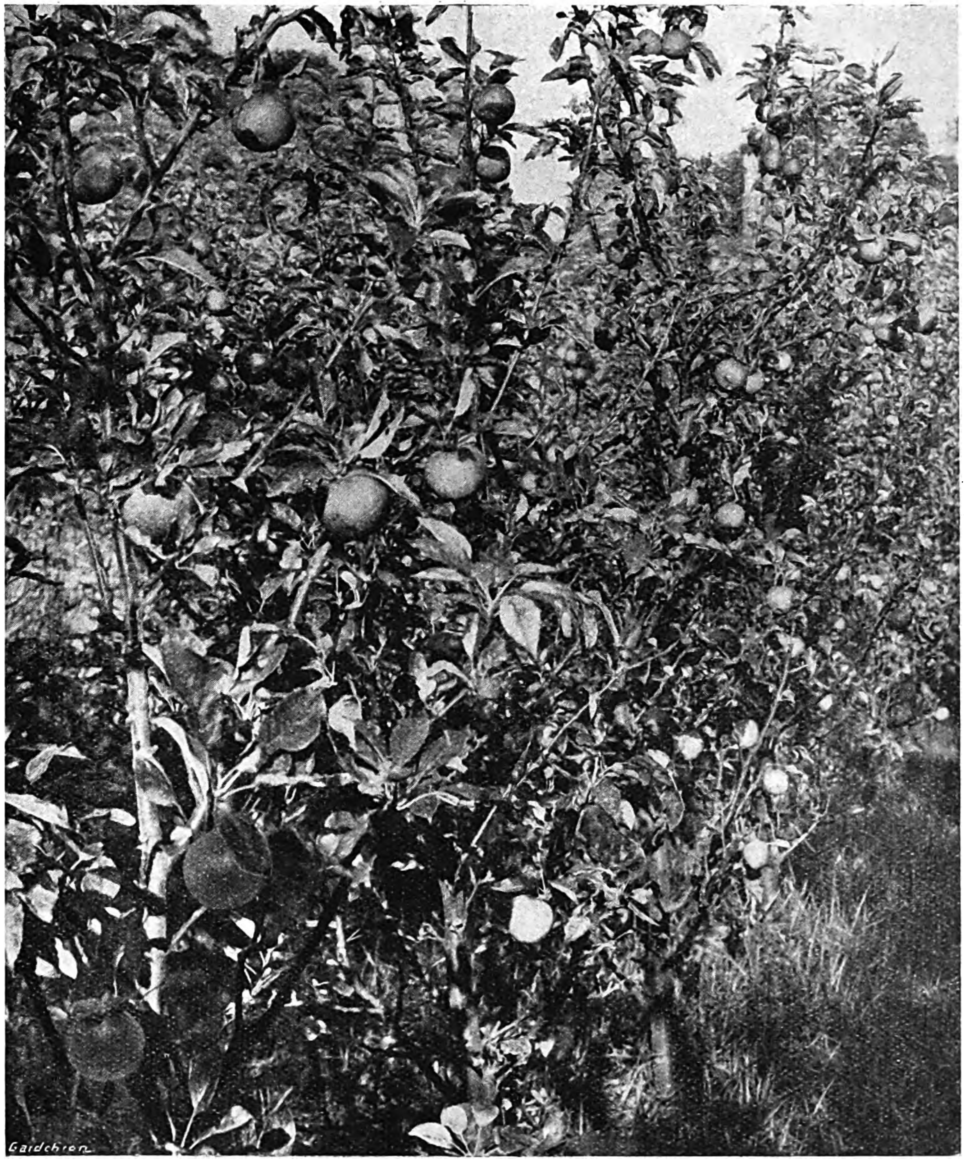


FIG. 169.—INTENSIVE APPLE CULTIVATION: THE TEN-YEAR-OLD TREES IN FRUIT.
(see Fig. 170, p. 359).

Third Winter Treatment.—In the third winter the tree consists of three tiers. The upper, or third, is the main stem leader; the middle or second consists of main stem with lateral shoots of one year's growth, and the lower, or first, of main stem with laterals of two years' growth, the older portions of which bear incipient spurs. The treatment is similar to that given in the second winter.

Subsequent Treatment.—The further building up of the tree consists merely in the repetition year by year of the processes already described. As, however, the tree grows older, the need for spur pruning arises in the winter as well as for main stem and lateral leader shortening. The system adopted at Brockley is the well-known three-bud system advised by continental workers.

When the tree reaches about eight feet in height, it is advisable to stop further main-stem leader growth. This is best done in summer by treating the leader as if it were an ordinary summer-pruned shoot, *i.e.*, by cutting it to two good buds. If the tree has been placed under the right conditions of growth, and given the correct space for the variety, this process is attended with no difficulty.

The time also comes when the lateral leaders should be stopped. At the distance of three feet from tree to tree there is an available horizontal space of eighteen inches, or about two feet, as the oblique lateral grows. This means that there is room for about three years' growth on a lateral. At this stage, therefore, they are stopped in the same manner as described for the main stem leader, namely, by the summer two-bud cut. The result of all these operations is that the tree now consists of a main stem about eight feet in height, with upwards of fifty short, radiating branches. These branches are covered with spurs, or developing spurs, and vary from one to two feet in length. The whole tree, therefore, represents a very large effective bearing surface in a very small space, and the first object has been attained, namely, the building up of the greatest bearing surface in the smallest space.

GENERAL TREATMENT OF THE PLANTATION DURING BUILDING UP.

During the first two or three years the ground is kept cultivated, but inter-cropping may be practised. For this purpose vegetables are preferable to Strawberries, as they allow of ploughing being done at some season of the year. Three furrows are turned on each side towards the trees, an open furrow being left for drainage. This work can be done by one horse, as deep ploughing is neither necessary nor desirable.

In the third or fourth season open cultivation is discontinued and the ground sown down to a cover crop. The use of a cover crop (Fig. 170) should, of course, depend on climate, and more especially on the summer rainfall. In the drier regions, such as the east of England, it may be sufficient to sow the crop some time in July and plough it in during winter. In Somerset, however, this has not the slightest effect in checking the trees, and it has been proved necessary to keep the crop down at least until the subsequent summer before any effect can be seen. The main object of the cover crop is to check the rather strong growth usually being made in the third or fourth season. This it does by its action on the roots of the Apple trees. The exact nature of its action may be debatable, but it certainly has the effect of using some of the surplus rain as well as, by its covering action, of preventing much water from reaching the ground.

Besides its main action of checking the trees and throwing them into flower, it has the further advantage of lessening pruning and saving cultivation expenses. The only item to be set against it is the cost of about three cuttings in the year.

Not every forage plant is suitable as a cover crop. For use among dwarf trees it should not grow more than one foot to eighteen inches in height, or it may prevent access of light to the lower branches. For this reason both Lucerne and Lupins are unsuitable. A Leguminous plant is, of course, desirable, and most of the Clovers would be convenient if the conditions for their growth were suitable. In practice red Clover has been found satisfactory. It is not quite so drastic in action as a grass crop, although in the course of time under nitrogenous manuring it gives way to grass. The change, however, is gradual, and can be stopped at any moment by the use of the plough.

The manuring adopted during the building up of a plantation differs in no way from ordinary practice in fruit farming. Three stages are, however, definitely recognised. In the first, after planting manuring should be generous to ensure a good growth from the start. In the second stage, which usually begins with cover cropping, manure is deliberately withheld in order to assist in flower bud formation. In the third, when cropping has started, manuring is again on the generous side.

Spraying differs in no way from ordinary practice, except that it is far easier. Much less fluid is used, the time taken is shorter, a smaller machine can do the work, and yet it is easier to perform the operation thoroughly than in the case of bush trees. In the early stages a pneumatic knapsack machine is sufficient, and it is enough for full-grown trees, provided the number to be sprayed is not too large.

While the above description of the general treatment applies to average conditions, it is necessary to vary it somewhat to fit special cases. In practice, on the large scale, land is frequently patchy, and it is found that very marked differences of growth may be encountered as the result. If the land is very poor, suitable manure should be applied locally, but the weak trees may also be helped by differential pruning. No summer pruning should be given to weak trees, but the winter pruning should be extra hard. Extra strong trees should be checked when possible by withholding manure. This, however, is usually not sufficient, and the practice of stem-ringing is then of invaluable assistance. This practice, namely, of removing a ring of bark from the main stem, is attended with certain dangers in the hands of the inexperienced, and there are certain precautions which should be adopted. The operation must not be performed on young trees, and in any case only a narrow ring should be removed. The actual width depends on the condition of the tree, but it should not be so broad as to prevent complete healing over before the end of the season. The effect of the ring is to produce a considerable check, and to lessen very greatly the pruning necessary. The operation usually induces fruiting for the next year, and so steadies the tree, and brings it into line with the rest of the trees in the plantation.

THE FINAL RESULT.

The result of the operations above described is to produce a plantation of 2,400 trees per acre, each of which is about eight feet high. Each tree consists of a main stem with upwards of fifty short, radiating branches covered with flowering spurs. There is thus a great bearing surface in a small space, and practically no bare wood. No supporting structure is necessary, and no ladders are needed for any operation. The trees then withstand high manuring, are very easy to spray, and need but little pruning once they are built up, while the crop is easily gathered from them.

Such a plantation has a very high bearing capacity. To get an insight into the possibilities for cropping, it is only necessary to consider that one pound of fruit on the average per tree means one ton per acre. Four good fruits of Cox's Orange Pippin weigh a pound, and so out of the two hundred or so of flower trusses on a full-grown tree, it is only necessary to secure, on the average, the set of four fruits to get a crop of one ton per acre. Although no trees are yet fully developed, so much as 7½lbs. of Cox's Orange Pippin Apples have been picked from such a tree in a bad season like the last. From a Lane's Prince Albert (type 2), 14lbs. have been picked, and from Stirling Castle (type 2), 13lbs. on a half-grown tree. On a Catillac Pear so much as 25lbs. of fruit have been secured. These figures are very suggestive of the great possibilities of the method. It is indeed impossible to guess at present how far cropping can be increased under this system, where flowering is controlled by other methods than by withholding manure. Single crops, however, are not the ideal towards which the grower strives. It is the average crop that is the important factor, and to increase this, it is necessary to attempt, so far as possible, to produce continuous cropping.

To attain this ideal, two things are necessary the control of the "water factor," and high manuring. Where the "water factor" is high, as in the trees on the strong stocks, in trees under hard pruning or high manuring, in vigorous varieties and in trees subjected to high summer rainfall, extension growth is vigorous and spur-formation tardy. In all these cases special measures must be taken to secure the necessary check.

Where the cause is high manuring, or too hard pruning, the opposite treatment can be given, but in the other cases it is necessary to fall back on cover cropping and ringing.

These two treatments are especially adapted to the wetter counties. All variations between these conditions and the drought environment caused by dry summers combined with light soils, as in certain parts of East Anglia, may be observed. The principles of treatment remain the same, but the practice varies. This argument has already been developed by the writer elsewhere in fuller detail.

When once the necessary check has been obtained and the tree covered with spurs, high manuring may be practised with profitable results. By these means, on the small scale, Allington Pippin has been made to crop continuously for five years, and Conference Pear for three years, with increasing crops each season.

There is no reason at all why corresponding results should not be obtained on the large scale as well as on the small. It is in this direction, namely, of the production of much higher annual crops, that the future of successful commercial Apple and Pear growing should lie.

SUMMARY OF THE ADVANTAGES OF THE SYSTEM.

(1) It is intensive, but no wiring, staking or support of any kind is necessary.

(2) It is economical in land, enabling the small cultivator to start with a minimum of land (which he has to buy).

(3) Cultivation is easy so long as cultivation is necessary, and afterwards, cover cropping entails but little labour.

(4) Spraying is cheap and thoroughness is easily attained.

(5) Picking is easy.

(6) The trees are very rigid in the soil and mechanically the weight of the crop is evenly distributed; no propping is necessary.

(7) Fruits cannot shake off in a strong wind.

(8) The fruits are exposed to the light, and so the production of colour is favoured.

(9) The tree soon reaches the fruiting stage and a high proportion of large fruits is produced.

(10) Attacks by insect pests and fungous diseases are noticed easily owing to the accessibility of the trees. *A. H. Lees, M.A., Long Ashton.*

MARKET FRUIT GARDEN.

THE rainfall of April (2·23 inches) was slightly below the average, and there was a dry spell from the 19th to the 28th inclusive, which was ideal for the pre-blossom spraying of Apples for the prevention of scab. That is all the good that can be said about the month. Frost, sleet and cold winds were experienced, and undoubtedly did a good deal to mar fruit prospects. How it was that the frost did not do more harm I cannot understand, for I had 7° four feet above the ground on the morning of the 18th, and it must have lasted for some time, for ice was quite thick on a barrel of water. Little visible injury was done to the blooms, but the effect of the unfavourable conditions for pollenation have become apparent since, and may yet show still more. Very little harm was done to Gooseberries, and only a few of the buds of Black Currants were frozen, so that they afterwards dropped off without opening. It was the Plums which suffered most. How much these were thinned out will not be known until it is seen what proportion of the crop is going to swell. One thing is quite certain; the crop of Victoria has been practically wiped out for the second season in succession. This variety has hardly any leaves at the time of blooming and is always vulnerable. It was probably the leafy condition of other trees which saved them to a large extent. I shall, expect to find that Monarch has set a good crop as this had finished blooming when the frost came. Pond's Seedling also should do well, as this came into bloom much later and had fine weather at the time. Belle de Louvain also may have escaped. Fortunately Plum blossom was very profuse, so it is quite likely that there will still be as much fruit as the markets require. Every variety bloomed fully, except for some trees of Czar which carried a breaking-down crop last year. Had there been favourable weather for pollenation this would probably have been a wonderful Plum season.

OTHER FRUIT BLOSSOM.

Pears and Cherries were covered with blooms, and the former, at any rate, seem to be setting well. Apples came on with a rush at the end of the month. I was afraid I was a week too early in starting the application of Bordeaux mixture, but, as it turned out, the work was only just completed in time. The opening of the buds was so rapid that most varieties were able to cheat the Apple Blossom Weevil, so that little harm was done by that pest. Considering, what a heavy crop of Apples I had last year there is far more bloom than I expected to see. I shall be short of late cooking varieties, particularly Bramley's Seedling, but the most valuable dessert kinds are making a fine show, notably Beauty of Bath, Worcester Pearmain, Cox's Orange Pippin and Blenheim Pippin. The blooming of the two last is particularly profuse. Amongst bush fruits Gooseberries promise a good crop and Red Currants look well. The Black Currant crop will not, I think, be so heavy as it was last year. The French Black varieties, including Seabrook's Black, look well, but there is a very poor crop of Baldwin and only a moderate one of Boskoop Giant. Strawberries are now throwing up a fair amount of bloom, but Raspberries are breaking badly.

Pests and Diseases.

Fruit trees and bushes generally look healthy and are making rapid growth, but there are one or two fungous diseases in evidence which are no doubt a legacy from the wet summer of last year. Die-back (Botrytis) of Gooseberries and Currants is one of these, and is widespread throughout the district. I have had the affected shoots cut off and burnt. I have never before had enough of this on Black Currants to worry about, but this season a good many young shoots are affected. Another disease which is particularly in evidence is the blossom wilt and wither-tip form of brown rot on Plums. In one variety, Black Diamond, which in any case is useless with me, almost all the flowers went off with this disease, and there is a lot of it on Rivers' Early Prolific. Insects, so far, have given no trouble at all. Judging from a few trees seen in cottage gardens, it seems likely that I might have had a rather bad attack of leaf-curling Plum aphis had tar-distillate wash not been used. I do not think there would have been many aphides on Apples in any case. Caterpillars are also scarce, even on unsprayed trees. Black Currants look wonderful as a result of tar-distillate spraying, the leaves being large and perfectly free from aphis. A trial on a small scale of two of the new proprietary miscible oil washes indicates that these, when applied to dormant Apples, give a good control of red spider. I think they have given a certain amount of control of aphides, but there is not enough of this pest on the unsprayed trees to allow of a definite conclusion. Certainly the control of aphides was not complete. What concerns me more than anything now is the prevention of Apple scab. Will this be as successful as it was last year? The pre-blossom spraying was done under good conditions, and the blooms have since been open in mainly sunny weather, the only rain having been thunder showers of short duration. If it is true that scab attacks the trees only when they are wet for forty-eight hours, as the Americans tell us, there should be a good chance of control, if only the weather holds until the first of the after-blooming sprays can be applied. Much fresh foliage has been made since the first spraying was given, and one is powerless to protect this whilst the blooms are fully open, and must wait until nearly all the petals have fallen. Some authorities advise the protection of the trees by spraying just before each predicted rainy period, as if the job could be done in a couple of days. It takes me nearly a fortnight to get through my plantations with a power sprayer and four nozzles, and mine is not a large place as fruit farms go. If dusting could be demonstrated in this country to give as good results as wet spraying—and there is no reason theoretically why it should not—one would be inclined to adopt this method for the sake of speed.

Red Currants.

Is there rhyme or reason in the conventional method of pruning Red Currants? I doubt it. I have about an acre of them, now in their sixth year, and I am still waiting for a substantial crop and am still struggling to make decent bushes, simply because I determined to grow them in the conventional form, with only four or five closely-spurred branches each. The trouble is to get them to grow to any height. They make a lot of growth every year, but it does not come where it is wanted, from the ends of the main branches, but from the base of the bush so that most of it has to be cut off and wasted every winter. The main shoots are cut back by about half each year, and most of them fail to shoot from the buds to which they are pruned. Such fruits as they bear are very fine, but most of them are borne close to the ground where they get covered with grit and dust. Surely it would be better to allow the main shoots to extend full length for a few years after the first cutting back after planting, so as to get the bushes high off the ground before they begin to bear. I am told that the trouble is that the soil is too stiff for Red Currants. I can only state that some old bushes in my private garden, which have never had more pruning than mere thinning out, bear tremendous crops and have won me several prizes at shows. An acre of bushes like those would have yielded me tons of fruits by this time. The Americans, apparently, grow them on the stool system, and cut out the branches when they are about five years old, replacing them by new shoots thrown up from the ground.

The National Mark.

The Ministry of Agriculture has drawn up a scheme for the standardised packing and grading of all kinds of hardy fruit, which is now being discussed by growers' organisations. Growers who elect to grade and pack in accordance with these standards will be entitled to use the national mark, which is quite an attractive label, and will be used also for eggs and some other farm produce. It is expected that a start will be made with Apples in September, in time to include the bulk of the crop of this season. One welcomes this scheme as an attempt on the part of the Ministry to give growers really practical assistance in meeting competition from overseas. Its success, of course, depends on the extent to which it is taken up by growers, for its adoption is optional. So far as soft fruits are concerned, I doubt if it will be followed to any extent; but there is everything to be said for the adoption of the standards for Apples, Pears and Plums, which lend themselves to grading. *Market Grower.*

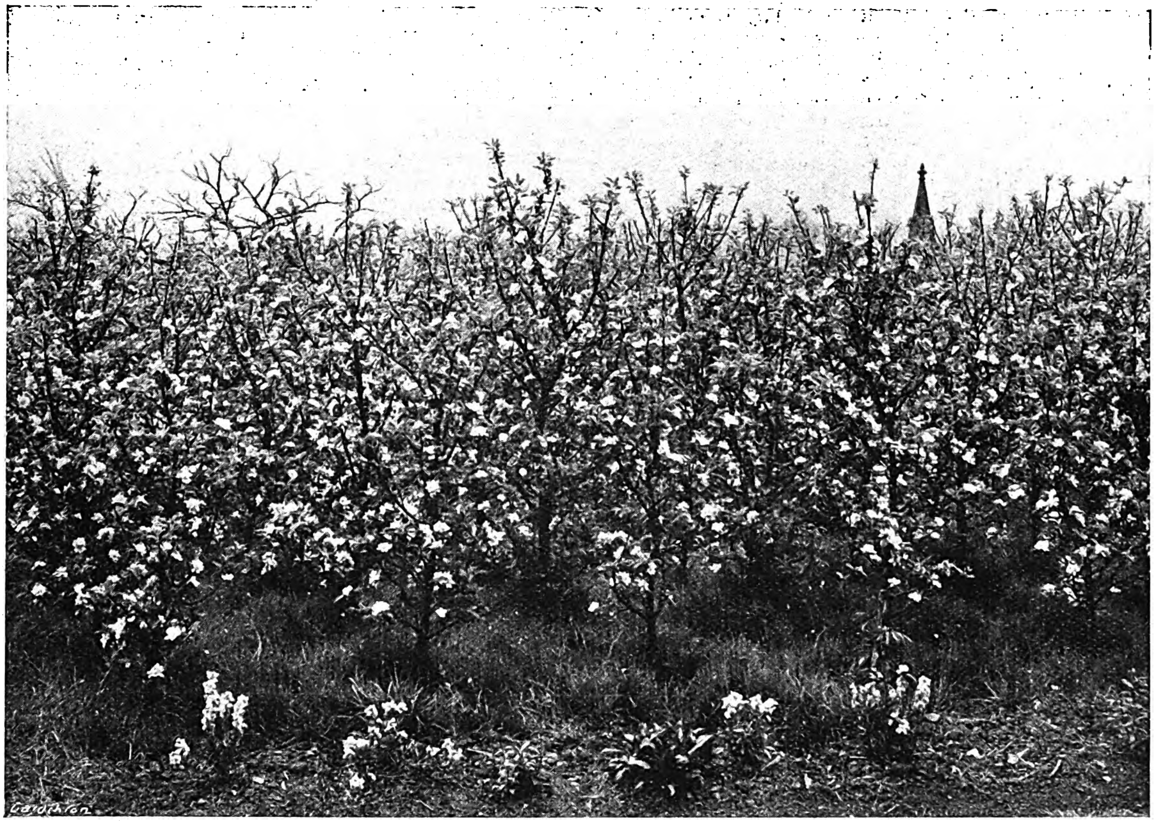


FIG. 170.—INTENSIVE APPLE CULTIVATION: TEN-YEAR OLD TREES OF COX'S ORANGE PIPPINS.
(see p. 358.)

VEGETABLE GARDEN.

RUNNER BEANS.

The Runner Bean is one of our most important and useful summer and autumn vegetables, and there are few gardens, large or small, where they are not grown. As they are tender and susceptible to frosts, the seeds need not be sown until the end of April, and there are several ways of doing this. For exhibition purposes, a good plan is to sow one seed in a sixty-sized, well-drained pot, using a light, friable compost that has been passed through a half-inch sieve. Place the pots in a warm frame and water the seeds in with a rosed can; a sheet of paper placed over them should prevent rapid evaporation. So soon as the seedlings are through the soil remove the paper and keep them close to the glass, watering them as they require it. The seedlings grow quickly, and should soon require shifting into five-inch pots, in which they may be grown on in a cool frame; a compost of two-parts loam, one-part leaf-soil and one-part well-decayed horse manure, with a little soot, should suit them, and the frame should be kept close for a day or so. When re-established they may be given plenty of air to assist in hardening them off ready for planting out.

Another good method of raising them is to sow the seeds in boxes, placing the seeds about three inches apart so that when the time comes for planting out they may be lifted with a trowel with good roots. They germinate quickly if treated as advised for the pot method. If watered when sown, they should not require more until they have germinated, when they should be watered carefully. Runner Beans may also be sown out-of-doors with good results if the ground is in good condition; the seeds should be placed about two inches deep and six inches or so apart, and the seedlings may be thinned out if necessary. Each plant should be given room to develop, and the crop should be large if they are allowed ample room. So soon as the seedlings are through the ground keep a watchful eye for slugs, as these are fond of the tender young stalks. Soot or coal ashes should be dusted round each one as a preventive.

Runner Beans like rich soil, and if the site has been trenched and well-manured, so much the better. Take out trenches about two feet wide and two spits deep, and work into the bottom spit plenty of rough garden refuse or half-decayed manure; this should assist drainage and keep the subsoil open. Mix some of the soil with this, then place well-rotted manure on top, and mix more of the soil with it. Finally, place on this the remainder of the soil and allow it to settle. About a week before planting time give the surface a light dusting of soot and wood ash and fork it in lightly, and when the soil is fairly dry tread it and rake it over. In regard to the supports to be used, this depends largely upon the material available in the neighbourhood; some growers prefer poles, and others large Hazel branches. The supports should be placed in position before the Beans are planted, for there is then no fear of damaging the roots. Some stout poles should be driven in at each end and also at intervals along the rows. A stout wire should then be run along about six feet from the ground and the smaller poles or sticks tied to these with strong tarred string. When all are in position the Beans may be planted, placing one at the base of each support.

Plant them carefully, water them, and tie each plant to its stake. An occasional hoeing should encourage growth, and they should not require much water for a time unless the weather is very dry, but a damping overhead on warm afternoons may benefit them.

For ordinary purposes the plants may be allowed to grow at will, but if first-class produce is desired a little more attention is needed. As they grow, the side-shoots should be pinched out, allowing only two or three of the strongest to develop, and these should be tied apart and induced to grow straight up. When the first flowers appear is often the critical time, for if the weather is dull or cold they often drop off. If this happens, do not water the plants but keep the surface of the ground well stirred to admit all the sun-heat and air possible. Bud dropping is often caused through a cold and uncongenial soil, and it is, therefore, very necessary to have the ground as well-drained as possible. To produce fine Beans the clusters should be limited to two or three, leaving the strongest and best shaped.

To maintain a good supply as the season advances the plants should be fed well with diluted liquid manure and an occasional watering with weak soot-water should help to keep them a good colour. In any case, the Beans should be gathered for use before they become old, as the plants become impoverished if the crop is not gathered regularly.

Any excess of Beans should be sent to the kitchen to be salted down to make excellent material for use during the winter months. If the summer proves dry, the rows should be mulched with long, strawy manure to conserve the moisture in preference to watering, although on some soils of a light nature watering is undoubtedly necessary.

If more than one row is grown, plenty of room should be allowed between them and, if possible, they should be made to run from north to south, thus providing for a maximum amount of light and air. Well-grown rows of Runner Beans are often one of the most attractive features in the vegetable garden. *R. W. Thatcher.*

HOME CORRESPONDENCE.

Narcissus Angel's Tears.—Will you allow me to comment on a statement made in your issue of May 5 (p.327) regarding the origin of the name of "Angel's Tears" given to Narcissus triandrus albus. It does not agree with a story told by Peter Barr himself. Somewhere about the early spring of 1888, he was travelling through the north-western provinces of Spain accompanied only by a young Spanish lad, whose christian name was Angel, and who had been taught a little English by a Cornish mine-inspector living near Ponferrada, called Nancarrow. The latter gentleman and his wife had started a Sunday school in the village where they were living, and Angel had formerly been one of their pupils. On one occasion while among the mountains, Peter Barr spied what looked like a white N. triandrus some distance up a rather steep slope, and sent Angel up to collect some bulbs. The going was rough, and the sun strong, so that by the time Angel returned with the bulbs, he was both weary and cross, and commenced to cry. Peter Barr then labelled this bag of bulbs (which turned out to be N. triandrus) "Angel's Tears." When they bloomed the following year, they were found to be of a stronger-growing type of N. triandrus albus to that found in Portugal. The gentleman who was always very helpful to Peter Barr when he was travelling in Portugal was the late Alfred Tait (Baron de Soutellinho), at whose house, in 1887, he was a guest for some time. The late "Baron," as he was called, was a great enthusiast, and had a garden of all sorts of rare plants in Oporto. He was the first to rediscover Narcissus cyclamineus after it had been lost sight of for two or three hundred years. *Peter R. Barr.*

Apple Scab.—In reply to Mr. E. Brown (p. 285), I regret that I cannot help him with regard to the record of individual trees in connection with Apple scab. All my varieties are planted in belts or blocks, and I have not kept a record of the behaviour of separate trees. I can say, however, that different blocks of the same variety vary in this respect. I generally know, for instance, in which plantation or part of a plantation to look for the cleanest sample of Allington Pippin. Sometimes, however, a block of trees which has had a good record for several years takes a turn for the worse, or *vice versa*. One tries to account for these happenings, but they are very baffling. One may form some theory, but it is usually not long before it is upset. It seems likely that it may be a matter of nutrition. There is no doubt that trees which are over vigorous are particularly liable to scab. I find it harder to prevent scab on young trees growing vigorously in cultivated ground, than on older trees which have steadied down in growth, particularly when the latter are in grass. A good many market growers who went in for keeping pigs permanently in their orchards have been obliged to modify their methods, as they found that the fruits were more seriously attacked by scab, apparently because of the too generous feeding of the trees. I have seen the same thing happen after the intensive running of ducks under the trees for several years. It is possible that Mr. Brown's transplanted trees owe their reformed character to the reduction of vigour caused by the root disturbance. He mentions that his partially-shaded trees are robbed by the roots of the forest trees which shade them. I believe that this is a much more probable reason for their immunity from scab than the fact that they are shaded. I do not suggest that a starved and weakly tree is likely to resist scab. Probably the reverse is the case. Quite likely the state of moderate vigour which is associated with regular bearing and the general well-being of the tree is desirable also for scab resistance. There is a growing opinion that we may be able to do something against scab by correct feeding. Hitherto the manuring of most commercial plantations has been mainly nitrogenous. Now some growers are trying to correct matters by the use of phosphatic and potassic manures. This year I have included in my manurial dressing a liberal amount of potash, largely in the hope of lessening scab. There is a district near me where Gooseberries have been grown for many years, heavy dressings of stable manure having been applied annually. Some years ago, several fungous diseases began to cause serious loss. After investigation by various authorities, potash was suggested as a remedy, and it was used with marked success. It is not unreasonable to suppose that the same result might be secured with Apple scab, since potash is known to have the power of assisting plants to resist fungous diseases. It may be necessary to give annual dressings for three or four years before seeing any result, particularly as one dare not omit nitrogenous feeding in addition, unless the trees are already too vigorous. It is unlikely that we shall ever be able to prevent scab altogether without spraying, which is necessary for this purpose all over the world; but there is no reason why we should not, at the same time, make some attempt to increase the trees' resistance to the disease by means of feeding or the withholding of food, whichever appears to be called for. *Market Grower.*

Award to Pyrus Malus Russell's Weeper.—I see from your issue of May 5, that Sir William Lawrence is very confident that Russell's Weeping Pyrus can be distinguished from Excellenz Thiel. His opinion ought to gratify my friend, Mr. Russell, who, when he came down to Aldenham the other evening to inspect the latter, failed, like myself, to recognise any distinction, and admitted that it was the same as the one which he had exhibited. A fresh inspection of my plant shows that the blush-pink shade in the flowers is not constant, nor yet is their size; some are pure white and fairly large, others quite small and show a faint blush. I learn from Sir William's letter that Mr. Russell exhibited another weeping Pyrus nearer to Excellenz Thiel, which for some unspecified reason did not receive an award. Sir William has a power of drawing distinctions which has been withheld from Mr. Russell and me, if he can not only separate Russell's Weeper from Excellenz Thiel, but find room for another weeping Apple with, I presume, yet another name between the two. *Vicary Gibbs, Aldenham.*

Norwegian Forget-me-not.—I am interested in the enquiry (p. 306), re "Norwegian Forget-me-not," and I imagine the name is purely local. I gather, however, by the description—although vague—the plant referred to is Omphalodes verna alba, which has pure white flowers from April to June, and foliage of a glaucous grey colour. This white variety of the well-known Omphalodes verna is a very pretty woodland trailer, and perfectly hardy, succeeding in the border or rock garden where its branches may overhang the ledges. A well-drained, moist soil and partially shaded situation suits it; height six to nine inches. *W. L.*

The Old Blue Polyanthus.—Two most interesting contributions by J. F. and Norman G. Haddon appeared under Home Correspondence in the *Gardeners' Chronicle* of April 16 (p. 271), and April 30 (p. 307) of last year, following the article on "The Origin of the Blue Primrose," on April 2, 1927, (p. 232). The old blue Polyanthus was mentioned as being a parent in at least one strain of blue Primroses; more information about this plant will doubtless interest many of your readers. Mr. Norman Haddon, of West Porlock, referred to a plant grown in an Aberdeenshire garden about 1878, and he has taken the trouble to find out more about it. It was grown in Mrs. Pirrie's garden, at Stoneywood, near Aberdeen, and her mother grew it also. This takes one back a century at least. Mr. P. D. Williams, of St. Keverne, remembers the old blue Polyanthus from his earliest youth, for his mother used to grow it in pots in the sixties. It was slatey-blue in colour, and known by the name of Lady Penryn. Mr. Williams saw it last in Ireland, about 1895, and his impression is that it was generally growing in boggy land, and that he thought it required acid soil. Max Leichtlin sent some of his first blue Primroses to Mr. Williams, who considers they were differently bred from Mr. Wilson's, as they had smaller eyes. It was noted that Leichtlin used the old blue Polyanthus as one parent for his blue Primrose strain. Would Mr. G. F. Wilson have used Primula amoena as one parent? Mr. J. McAra, of Crieff, Perthshire, who grew the old blue Polyanthus in quantity from 1870 to 1885, has tried hard to trace one plant, but so far has failed. It was grown in numerous gardens in Perthshire. Mr. A. G. Maxtone-Graham, of Cultoquhey, writes of these early plants as follows:—"The blue Polyanthus, that used to grow in the garden at Cultoquhey, from my earliest recollection, was brought over by Lord Lynedoch from the Alps, and was planted at Lynedoch Cottage. A few plants were sent from there to my grandmother, at Cultoquhey, from Lord Lynedoch himself. He died in 1845, and it must have been many years before that date when the plants were sent to Cultoquhey. They were kept going there until 1902, when I left, and alas! now none exist!" All those who so kindly sent information give the colour as pale blue, slatey-blue, or Cambridge blue. As Mr. McAra puts it: "If you have a bed of Gentiana Farrerii growing alongside one of Gentiana sino-ornata, this will best describe the difference between the old blue Polyanthus and the newer seedlings." *A. Hosking.*

The Destruction of Slugs.—In connection with the destruction of slugs and snails, it may perhaps be of interest and practical use to record a method which I have seen employed in France with great success. The old hospital of Saint Marcoul, in Reims, where Charles VII touched the patients for King's Evil after his coronation in the cathedral in 1429, was reduced to ruins by constant bombardment during the war, but its attractive old garden suffered little injury. After the Armistice, the ruins were converted into a temporary maternity hospital by Americans, who delighted in the garden. I lived there as a very happy guest for four months, helping the poor population of the city to make little gardens around their ramshackle temporary dwellings. In 1922, this garden was devastated by hordes of slugs and snails, which we tried in vain to exterminate by every method known to us. They simply ate every bit of green so soon as it appeared above the ground. At last a French gardener told us to pound up the blue crystals of copper sulphate until they were reduced to the finest possible powder, and then place it all around the garden plots, just inside the Box edgings, and also around the seedlings and plants, taking great care that it was too far away from them to injure either their leaves or roots. The result was sudden death to every slug and snail which touched the copper sulphate, because it immediately dried up all the moisture in their bodies, leaving them as a hard, dry skin at the edge of the copper sulphate cordon. A great advantage of copper sulphate is that moderate rain does not dissolve it. A disadvantage of it, is, of course, the fact that it is a deadly poison for human beings and animals, and for that reason should only be used by responsible persons. Gloves should be worn when it is handled. Since that first introduction to this method of slug destruction, I have always used it, with unvarying success, and have never found it injurious to plants or animal life, but I have naturally been careful when applying it. A very little is sufficient. I may add that the onslaught of slugs on the Sweet Pea seedlings in that old garden at Reims gave me an interesting tip. These plants were eaten to the ground several times, but after the copper sulphate had annihilated the slugs, they came up as delightful, many-branched, little bushes, bearing exceptionally fine blooms. Since then I have always grown Sweet Peas as single plants in herbaceous borders, and by judiciously pinching them when in the seedling stage, have turned them into little shrubby plants, which I stake in the same manner as Michaelmas Daisies. *Victoria Slade.*

SOCIETIES.

FÉDÉRATION HORTICOLE PROFESSIONNELLE INTERNATIONALE.

THE annual gathering of commercial horticulturists was held during the Ghent Floralies in the great circular hall of the University of Ghent. M. Charles Pynaert, the President, presided, and there was a very large attendance of delegates and visitors at the opening proceedings, the British folk present including Mr. George Monro, Mr. G. W. Leak, Mr. E. Laxton, Mr. W. E. Wallace, Mr. A. G. Merryweather, Mr. P. Murrell, Mr. E. Murrell, Mr. Arluison, Mr. C. H. Curtis, Mr. Rich, Mr. A. W. White, Mr. Brunton, Mr. C. Engelmann, Mr. J. Artindale Mr. C. E. Pearson and Mr. L. J. Cook.

The Conference opened with a speech of welcome by M. Baels, the Belgian Minister for Horticulture.

The Vice-Chairmen of the Conference were elected as follows:—Mr. Krelage (Holland), M. Vachoux (Switzerland), and Mr. E. Laxton (Great Britain). The Conference Secretaries elected were: M. Barbier (France), M. Ketten (Luxemburg), Mr. Arluison (Great Britain).

The application of the Italian Organisation being in order, its admission was agreed unanimously, and M. Pynaert, President, welcomed the Italians to the Conference.

The minutes of the Geneva meeting and the General Secretary's report were adopted.

The President then recommended the immediate discussion of Article 12—Phytopathological Questions—in order to give plenty of time for this important question, in view of the early departure of most of the French delegates, owing to the elections in France.

M. Pynaert's report was fully considered and action in the parliaments of the various nations represented and influencing of public opinion everywhere were recommended.

Mr. Krelage read his report on the Phylloxera Convention and the coming meeting of the International Institute of Rome in October next. Baron Tibbaud, Belgium, remarked on the efforts made in his country to improve the interchange of plants, and he approved M. Pynaert's action in this direction. He insisted on the phytopathological work already done and hoped that when this was perfect the American prohibition would disappear.

At the afternoon session Mr. Krelage (Holland) continued his explanation of the Rome Convention and urged an amendment of Article 4, by which horticultural produce to be imported for consumption or used for decoration should be exempt from certificates, whilst plants to be cultivated should of course, be accompanied by certificates.

Mr. Leak (Great Britain) pointed out the exceptions for fruits and Potatos, and mentioned the Cherry-fly. Mr. Krelage replied that Article 6 of the Convention should meet the case. Mr. Turbat proposed to send a telegram to the Rome Institute thanking them for their collaboration.

Dr. Van Hove (Belgium) read his report on co-ordination of the phytopathological services. M. Pynaert remarked that in many cases matters should be settled between members of the F.H.P.I., before applying to the various Governments in order to avoid strong measures that might not easily be recalled.

The British delegation could not quite agree to this point of view, considering that the subject should be examined by their Councils.

M. Aussel (France) made some remarks on the Cherry-fly, and concluded by wishing better understanding when all these questions are considered internationally, which was agreed. Dr. Van Hove proposed the unification of phytopathological certificates, which was agreed to.

The report by Dr. Scheerlinck on the disinfecting of plants was then discussed.

M. Pynaert then concluded by a few remarks on his report, and proposed to the Conference the observations on page 63 of the *Report*, and his remarks on the fight against plant enemies, page 99. All agreed.

A Committee of three was elected to check the accounts:—Mr. P. Murrell (Great Britain), Mr. Ruys (Holland), and Mr. Blosfield (Germany). Then came Mr. Sauvage's report on the International Bureau of Registration (pages 16-20 of the *Report*). The general discussion which took place showed the little interest taken in the Bureau as it exists now. The British delegation proposed that it should be continued, provided it could be made more useful by only registering plants of proved value, that is, those which have received Awards of Merit, Medals, etc. Mr. Turbat remarked on the difficulty of selection and also the danger of coming up against certain laws, of France in particular.

Mr. Leak (Great Britain) gave an example of the work undertaken at present by the R.H.S. for Tulips, but remarked that only wealthy societies could undertake this kind of work. Finally, the Conference agreed to nominate a Committee which would study the question between now and the next Conference, and give a full report next year. Those nominated were Mr. Ruys (Holland), President; Mr. P. Murrell (Great Britain), M. Ketten (Luxemburg), M. Rivoire (France), M. Spae (Belgium) and M. Mercatelli (Italy).

A meeting was arranged between the Dutch Delegation and British Delegation, to take place on the next day at 2 o'clock.

Mr. Turbat remarked on the Dutch proposition for the admission of some nations on a limited membership at a reduced rate of subscription. The French delegation made a counter proposition on the same subject. Mr. Turbat also mentioned the question of finance, both these questions to be considered this year, but not definitely voted upon until next. The French proposition also contained an alteration in the number of delegates from each nation. After discussion of these subjects and a proposition to create a fifth division of horticulture, viz., bulb culture and the possible addition of landscape gardening, the question was left for decision until next year.

On the question of subscription, which was raised by Luxemburg, the British Delegation admitted that this small country should not be expected to pay so much as Great Britain, for instance. To make things easier for the Treasurer, and in accordance with Mr. Turbat's suggestion that the various delegations might fix their own subscription, the British Delegation agreed to pay next year the sum of 1,250Fs.

Mr. Turbat said that the same amount could be expected from the French Federation, but Mr. Krelage, for Holland, said he could not decide just yet.

The Conference met again on April 20, at 3 o'clock, when M. de Vuyst, Delegate of Belgium and Luxemburg to the International Institute of Rome, made a communication to the meeting concerning the Institute, stating that seventy-three states were represented, and that many questions would be examined in October, 1928. He also made a confidential communication to the heads of the various delegations.

The Conference was informed that the accounts had been checked by the Committee nominated the day before and the President, M. Pynaert, wished to express the thanks of the Federation to the Treasurer for the way his accounts are kept. After meeting expenses of printing, etc., there was a balance of 1,961Fs.

Regarding the position of horticulture in various countries, M. Mercatelli, Italy, read a Report showing satisfactory development of horticulture in his country. Reports from other nations are published in the General Secretary's report.

A report from Mr. Van den Heede, France, on over-production was read, and there was a discussion on this point. There was also a report from Luxemburg. It appeared that checking of various stocks and limitation of production are very difficult in practice, if not impossible. The law of supply and demand is in the end the only regulator. The discussion was concluded by a wish that all organisations should study this question very thoroughly and report fully at the next meeting.

The British Delegation asked whether the Dutch representatives could give fuller information and help in minimising or reducing the dumping which is so objectionable. Mr. Krelage (Holland) admitted that there was cause for complaint, and hoped that some improvement might be made in the situation. Mr. Leak (Great Britain) and Mr. Scheitlig (Germany) emphasised the need for better arrangement, as forcers of bulbs could not be expected to buy from the Dutch and then accept the competition from the same country flooding their markets with cut flowers.

On the question of black lists, the British Delegation had a meeting with the Dutch Delegation before the Conference, and had agreed various points between themselves. In any case, it should not be a question of "black lists," but of giving information when required, and this should be done privately by correspondence between the various Secretaries or Presidents of organisations.

The Polish Association read a report to the effect that some business could be done with that country if help were given, and the President, M. Pynaert, expressed the hope that Poland might in the future be represented in the International Federation.

Mr. Merryweather, in the name of the British Delegation, invited the Conference to London, in 1929, at a date to be fixed later, probably at the time of the Chelsea Show. All delegations accepted the invitation. M. Turbat (General Secretary), observed that it was usual for the country inviting the delegations to nominate the President. Mr. Merryweather then proposed Mr. Leak as President for 1929. Mr. Leak was elected, and thanked the Conference. He said that the British organisations would be pleased to see all their confrères in London, and to show them the exhibition at Chelsea, as well as the new Hall of the Royal Horticultural Society.

Mr. Blosfield (Germany) proposed that the Conference meeting of 1930 be held in Germany, probably in Berlin. Mr. Scheitlig was therefore elected a Vice-President.

M. Turbat (General Secretary), M. Barbier (Assistant), Mr. Sauvage (Treasurer), and the International Secretaries were all re-appointed.

The President, M. Pynaert, thanked the delegates for their attendance and for the work done, and especially thanked Messrs. Turbat, Barbier and Sauvage for the considerable work accomplished for the sake of horticulture and the good of international relations.

Mr. Ruys, in the name of all the delegates, thanked M. Pynaert for the way he had conducted the work of the Conference.

NEW YORK HORTICULTURAL.

THE fifteenth International Flower Show, under the auspices of the Horticultural Society of New York and the New York Florists' Club was held recently in the Grand Central Palace. Such Roses as were there are only seen in this particular week, for although Roses are skilfully grown all the year, not even a Fifth Avenue store can boast anything to compare with those blooms. Trade growers vied with each other for premier awards, and so keen was the competition that it seemed difficult to place any one second.

It may interest home readers to know that Dale's Nurseries, Brampton, Canada, took a foremost place. The President Calvin Coolidge Medal for a plant or flower grown in America and shown for the first time, was fittingly gained by the new Rose Talisman, which, if found as accommodating as Ophelia and Souvenir de Claudius Pernet—the parents—will do its little share in fostering a love of gardening among the masses. The exquisite colour changes from orange at the base of the bud to apple-blossom at the tip, and a fully open bloom is cameo coloured.

Although Roses stood out more dignified and grander than all, the outstanding exhibit in the show was that of Mr. JOHN SCHEEPERS; this was a Tulip garden designed after the Italian renaissance period. A paved path led up the middle to a magnificent broken pediment archway with sixteenth century hand-wrought iron gates, with Bellini statuary on either side—Ceres and Bacchus. An Italian vista scene was beyond the gate. Such a garden demanded the planting of bright colours, and 8,000 Darwin, Breeder, Mendel and French Tulips (among them many unnamed seedlings) were cleverly used. The new pink Mendel variety, Mrs. Evangeline Lindbergh, was worthy of its distinguished name. The choicest members of the Tulip family were presented—Leda and Cherbourg, to mention only two. One noted in this exhibit, too, Daphne Genkwa and Camassia praecox, both exceptionally scarce in these parts.

Another attractive exhibit, and giving a momentarily Marks Tey atmosphere, was one of Sweet Peas from Messrs. W. ATLEE BURPEE Co., Philadelphia, notable new varieties being Sweetheart, Mrs. Coolidge and Gildea Gray. Across the avenue from this display was a Cactus garden arranged by Mr. W. A. MANDA, erstwhile nurseryman of St. Albans. This was a Mexican scene, and a most popular one, judging from the crowding and scuffling at this point. On a stand near-by he exhibited Jasminum Mandianum (probably Trachelospermum divaricatum ?) and Dracaena Rothiana × D. grandis, with extremely thick, tough, green leaves; it should prove as defiantly resistant as an Aspidistra.

Messrs. BOBBINK AND ATKINS showed hybrid Rhododendrons, Azalea indica, A. Kurume and A. mollis; all were small plants and attractive in a district where such subjects are scarce.

Naturally, at a spring show, there was a plethora of bulbs, but what delighted the eye of the English gardener most was the quality of growth in autumn-sown annuals—Schizanthuses, Salpiglossis, Nemesias, Cinerarias; these surpassed anything I have seen in the homeland. Our winter sunshine undoubtedly makes the success of a New York spring show. There were few rare plants not already mentioned—a group of Gynura aurantiaca, known as the Velvet Tree, with attractive purple leaves, was unusual. It might make a good bedding plant in a sunny position.

What one could write of the two rock gardens seen at this show is best left unwritten; suffice it to mention that around New York the rock gardens of Chelsea have not yet materialised. Nor were the Orchids worthy of such a fine exhibition. Many poorly-grown plants were shown and little was seen of merit, except in Mr. GEORGE BALDWIN's group, from Mamaroneck, who had fine spikes of Calanthe Baron Schröder, Brasso-Cattleya Princess Patricia, B.-C. Princess Mary, Cattleya intertexta alba, and several plants of Cattleya speciosissima, flowering freely; his Cymbidium Pauwelsii var. President Wilson, with thirty-eight flowers, was awarded a Gold Medal as being the best Orchid in the show.

Sundries for the garden and estate were shown in plenty, and Mr. DE LA MARE had a stand of the most recent American garden literature.

Ladies' garden clubs (with table decorating for amateurs and professionals on separate days) a hundred-years-old Box tree (English) from Virginia; and landscape contractors' examples of their art, all helped to complete a really good show. *E.*

TRURO SPRING SHOW.

THE Cornwall Spring Show, held at Truro, is invariably looked upon as the premier demonstration of what the Cornish climate can produce in the way of flowers. Entries were seriously affected by the severe frost of early March, when many tender shrubs and Rhododendrons were severely damaged; the presence of "fire" in Tulips also reduced the entries in this section, yet in spite of these handicaps a wonderful exhibition was staged.

This exhibition is always rich in Rhododendrons and a wonderful group, composed mainly of new hybrids, was staged by Mr. J. C. WILLIAMS. This exhibit also contained well-grown specimens of Cunningham's Yellow, R. Augustinii and R. yunnanense. A competitive Rhododendron exhibit that aroused considerable interest was that staged by Mr. A. M. WILLIAMS, which took the first prize for sixteen trusses and included good blooms of Forrest No. 20,321, R. russatum, R. neriiflorum, R. haematodes, R. dichroanthum and R. Martinianum. Other outstanding Rhododendrons exhibited were fine trusses of R. Augustinii and Cornish Cross from Mr. R. BARCLAY FOX; a fine truss of R. Nuttallii from the same source; R. Aucklandii, from Mrs. HEXT; and R. Falconeri, from Captain W. F. TREMAYNE. Other striking Rhododendron blooms noted included Gill's Goliath and Beauty of Tremough.

Shrubs were not so numerous as usual, although some good Acacias, Ericas and Cherries were shown. LORD FALMOUTH was foremost with Acacias, whilst Mrs. HEXT took the premier award for Ericas, with good samples of E. melanthera, E. australis and E. Veitchii.

The Rev. A. T. BOSCAWEN's exhibit in the class for twelve shrubs was superb; it contained Leucopogon Richei, Epacris miniata, Veronica diosmaefolia, Corokia Cotoneaster, Dracophyllum arborea, Pernettya ciliaris, Mutisia Clematis, and a very white form of Cytisus proliferus. In this class, Mrs. HEXT was second, with good specimens of Staphylea colchica, Banksia buxifolia and Ceanothus thyrsiflorus. A class which claimed a good deal of attention was the one for Camellias, where Major JOHNSTONE staged excellent blooms of C. reticulata. Other features of the show were the Kurume Azaleas, Lily-of-the-Valley, Anemones and miniature rock gardens. The outstanding exhibit of Tulips was Miss WINGFIELD's; it included excellent blooms of Arethusa, Orient and Venus.

Great variety was seen in the herbaceous section, where Miss LAVENDER WILLIAMS took premier honours.

As usual, some very versatile trade exhibits added to the attraction of the show. An attractive rock garden was built and furnished by Messrs. MAXWELL AND BEALE; while Tulips, Anemones and Sweet Peas were shown to perfection by Messrs. J. H. COCK AND SON. The DEVON ROSERY gave the public a glimpse of delights in store by their fine display of Ramblers, such as Excelsa, Superba and Lady Godiva, and Messrs. R. VEITCH AND SON showed a very interesting group that included the new Azaleodendron Glory of Littleworth.

Mr. J. C. MARTIN, the Narcissi specialist, in addition to showing good blooms of N. Great Leap and N. Water Lily, put up some wonderful new, large-flowered Tulips, the best of which were Kansas and Dorus Rykers. Messrs. TRESEDER AND Co. had a good general nursery group containing Hydrangeas, Boronias, Cytisus and choice shrubs; whilst the PRIMLEY NURSERIES showed several uncommon plants. Several excellent non-competitive exhibits were put up, an innovation being a group of Orchids and Amaryllis, by Major HITCHINS, of St. Austell. Rhododendrons were shown by Mr. H. HODGE; choice flowering shrubs by LORD ST. LEVAN and Mrs. HEXT; and Daffodils by Mr. F. G. LAWSON, of Truro.

DEESIDE (ABERDEEN) FIELD CLUB.

THE annual meeting of the members of this Club was held in Aberdeen on Saturday, April 21. The Marquis of Aberdeen and Temair, President, who was accompanied by the Marchioness, occupied the chair. Highly satisfactory reports were submitted of the condition of the Club. The numbers on the roll were reported as twenty-five honorary members, twenty-nine life members, and 428 ordinary members. The losses by death, including several distinguished members, were higher than in any previous year. The treasurer's report showed a balance of £91 10s. 1d. to the credit of the Club, which was considered very satisfactory. Mr. J. B. Philip, Secretary, reported on the *Deeside Field*, the magazine of the Club, stating that the sales of Nos. 1, 2 and 3 amounted to between £700 and £800. A gratifying feature was that the third number had been produced without any cost at all to the Club. Mr. G. M. Fraser, public librarian, Aberdeen, moved that preparations be undertaken for the issue of a fourth *Field*. The motion was unanimously agreed to, Lady Aberdeen warmly supporting it.

Dr. Bremner, convener of the photographic survey of Deeside, presented his report, and it was agreed that a grant of £10 be given the Committee to enable them to carry on the work. Dr. Douglas Simpson Librarian of Aberdeen

University, reported that the money which the Club had granted for the excavation work at Kindrachit Castle, understood to be the oldest remains of such a building in Scotland, had been used and that additional funds were needed. He suggested that a committee be formed at Braemar, the district in which the Castle remains are situated, to work this summer under the auspices of the Club with the view to raising sufficient funds to complete the excavations. This was agreed to.

Lord Aberdeen was re-elected President, and owing to the resignation of Mr. James S. Davidson as Joint Secretary, Mr. J. B. Philip was appointed sole Secretary of the Club. The proceedings closed with the inspection of a delightful and interesting display of photographs of the Valley of the Dee, at the head of which stands His Majesty's Highland home, Balmoral Castle.

ASSOCIATION OF PARKS AND BOTANIC GARDENS SUPERINTENDENTS.

(Scottish Branch.)

A meeting of the recently-formed branch of this Association was held in Glasgow on April 21. Mr. Besant, President, occupied the chair and extended a welcome to the members and others interested who were present. Several resolutions were put to the meeting, with a view to having them considered at the annual meeting to be held in Chelsea, and after some little discussion the proposals were agreed to.

The Secretary intimated that the membership had been considerably augmented, and called upon the members present to do everything in their power to enlist the sympathy of all those in Scotland holding public appointments and eligible for election, and to put them in touch with the Secretary, Mr. Campbell, Perth. All the non-members attending the meeting signified their intention of joining the branch.

The next meeting of the branch is to be held in Edinburgh on the first day of the Royal Caledonian Society's Show at 5.30 p.m., when all interested are invited to attend.

MORAY FIELD CLUB.

The annual meeting of this Club was held at Elgin, and the President, the Rev. George Birnie, Parish Minister of Speymouth, occupied the chair. The president made sympathetic reference to the death of Dr. George Muirhead, Chamberlain to His Grace the Duke of Richmond and Gordon, at Gordon Castle, Fochabers, who was for many years one of the honorary members of the Club. By his passing, the President said the Club had lost a very distinguished scientist, whose particular interest was ornithology, but who was also a very enthusiastic alpine botanist. In the course of his researches, he had journeyed over some of the most interesting mountain ranges in the world, particularly the Rockies. The dates of eight excursions during the coming summer were fixed, and a committee appointed to draw up a syllabus. Mr. Alexander Miller, Headmaster at Alves Public School, was appointed Secretary in place of Mr. James Burgess, who retired recently.

Obituary.

Alexander Forbes.—We have received intimation from America to the effect that Mr. Alexander Forbes, Seedsman, of Newark, New Jersey, died on Monday, May 7. The deceased gentleman was for many years manager of Peter Henson and Co.'s seed store in New York, and had been for some years established on his own account at Newark, New Jersey, where he had developed a very good business. His wife predeceased him last year, and his two sons have for some time past been taking an active share in the business. Mr. Forbes was well-known on this side of the Atlantic, being a native of Brechin, Forfarshire.

William Waterman.—We regret to report the death of Mr. William Waterman, which occurred suddenly on May 9, at the age of seventy. He was apprenticed at Ward's Graperies, Bishop Stortford, in 1871, and from there passed to Eastnor Castle, Herefordshire, and later to Davenham Bank, Great Malvern, Worcestershire, under the late Mr. Jacques. His next post was with Sir Harry Peek at Wimbledon; then followed a time at Quenby Hall, Leicestershire. After a year or two at Wycombe Abbey, and at Leesons, Chislehurst, Mr. Waterman was appointed bailiff and gardener to the late John Gilliat, Esq., at Chorley Wood Cedars, in 1887, where he remained until 1919. During this period he carried out many alterations, and the main work in connection with Mr. Gilliat's afforestation scheme of 1888-9, which added considerably to the beauty of the estate. The Cedars estate is now in the hands of the Metropolitan Railway Country Estates, Ltd., and is in course of development. Retiring at the age of sixty-one to his home at Elsenham, Essex, after a very busy life, Mr. Waterman spent his late years in the quietness of his garden. Although he never sought public office, he will be remembered by those who knew him well as a man of sincere honesty of purpose, and friendly in adversity. The funeral took place at Chorley Wood Churchyard, on Saturday, the 12th inst. his grave being but a few feet from that of his late employer, whom he served so well for thirty-two years.

TRADE NOTES.

The Covent Gardener, published by the Sundries Department of Messrs. George Monro, Ltd., combines pleasing humour with business in reviewing their section of the horticultural trade. The publication for May is a Special Chelsea Show Number. An article entitled "The Principles of Tillage" should prove of interest to all who are interested in land cultivation, and there is also one dealing with "Rotary Tillage." The Simar Roto-Tiller, one of Messrs. George Monro, Ltd.'s specialities, receives considerable attention; and the notes about Volck, the new sprayer, should also receive the attention of readers. In connection with land tillage, the article that appeared recently in *The Gardeners' Chronicle* (March 24), "The Simar Roto-Tiller," by Mr. A. Falconer, is reproduced. "Slugs and their Control" is another useful and instructive contribution; in fact, the journal contains a large quantity of good sound information and advice, and also demonstrates well the large variety of really serviceable implements and garden sundries which Messrs. George Monro, Ltd., offer for sale.

Patents and Trade Marks.—Any of our readers requiring information and advice respecting Patents Trade Marks or Designs, should apply to Messrs. Rayner and Co., Patent Agents, of 5, Chancery Lane, London, who will give free advice to readers mentioning *The Gardeners' Chronicle*.

ANSWERS TO CORRESPONDENTS.

American Gooseberry Mildew.—*W. B.* The best results in combating this disease have been obtained from the use of ammonium polysulphide with soft soap: ammonium polysulphide half-a-gallon; soft soap, 5 lbs.; water to make up to 100 gallons. Two sprayings with this fungicide should prove sufficient, one so soon as possible and the next about three weeks later. If the attack is mild, two forcible sprayings with a solution of washing soda (one ounce per gallon of water), may prove sufficient to eradicate the disease. Good cultivation is an essential factor in combating the American Gooseberry mildew.

Cyclamen fasciated.—*W. S.* The specimen sent is an example of fasciation, that is, the flower-stems have become joined together instead of forming separately. Fasciation is by no means of uncommon occurrence.

Damage by Rabbits.—*W. C.* Rabbits are very difficult to exterminate from a garden, and the only method we can suggest is to protect the plants by the use of small-meshed wire-netting.

Flowers for Personal Wear.—*T. W. M.* In addition to the plants you are already growing, you might try some of the following: Gloriosa Rothschildiana, Tabernaemontana coronaria var. flore pleno, Clerodendron Thomsonae—which you can treat as a climber, or as a specimen trained on supports; Stephanotis floribunda var. Elvastoniana, which you can also treat in the same way; Pentas carnea, Manettia bicolor, Rondeletia odorata var. major, Toxicophlaea spectabilis. Brunfelsia macrantha, Mitriostigma axillare, Hibiscus Cooperi and Hoya bella. Bouvardias are excellent for button-holes; grown cool during the summer, you could introduce them to your warmer house during the winter. You should be able to grow Streptocarpuses in variety from seeds. A few warm-house Orchids, such as Selenipedium Sedeni, Selenipedium Dominianum, and almost any of the Cypripediums should be useful, as they last in flower a long time. Some of the Aerides are easy to grow and very suitable, A. odoratum being, perhaps the best for ordinary purposes.

Hardy Water Lilies.—*G. A. J.* The pond should be made about three feet to three-and-a-half feet deep, and if the soil is at all porous it would be best to puddle the bottom with a layer of clay, six to nine inches in thickness, to prevent leakage. Provision should be made at the time for a good water supply and also for an overflow. It is also a good plan to provide a drainage pipe at some easily accessible place in the floor of the pond so that the whole pond may be emptied if necessary for cleaning and replanting. A good method for Water Lily culture in ponds is to plant in baskets of rich soil consisting of one part cow manure, one of sand, and two of good loam. The basket culture allows one to move the plants easily about in the pond to allow for differences in vigour and the better blending of the colours of the flowers. Failing a supply of wicker baskets for this purpose, the Lilies may be planted in mounds of the same mixture as advised for baskets, built up on the floor of the pond, of some three to four feet diameter and a foot in depth. When planted the crowns of the Lilies should be approximately eighteen inches below the surface of the water. A few good sorts are as follows:—Nymphaea Gladstoniana (large, white), N. alba (white), N. Exquisite (rose), N. odorata rosea (deep rose), N. Attraction (rose), N. Colossea (flesh-pink), N. Marliacea chromatella (yellow), N. Newton (rosy vermilion), N. Moorei (yellow), N. Ellisiana (red), N. James Brydon (rosy red), and N. Escarboucle (vermilion red).

Insect for Identification.—*T. H. L.* The beetle sent is the clay-coloured weevil, Otiorhyncus picipes, which is capable of a great deal of damage. These insects are night feeders, therefore after dusk is the best time to trap them. A sheet of paper made sticky with tree grease or tar should be placed around the plants and at night a light should be flashed on the foliage, when the insects will drop on to the sticky material and be caught. Another method is to spray the plants with arsenate of lead.

Moss on a Hard Tennis Court.—*H. Barrow.* Most things that could be used on a tennis court could only be of a temporary character, because rain finally washes away the material of the remedy, when Nature resumes her method of covering everything that will support live vegetation. The remedy of lime and salt would, no doubt, be a good one, because the material of the court is probably deficient in lime and acid. The lime would doubtless leave a considerable whitish stain. Quick-lime may easily be reduced to a dry, white powder in a shed that keeps out rain. Lay it in a conical heap, make a hole in the centre and pour in a little water. The lime will soon get very hot and crumble. If any lumps remain, lay them in the centre and apply a little more water. When the hydrate of lime is cold, the salt may be added and well mixed. In place of this we would recommend equal parts of common or table salt and ammonium sulphate, both finely powdered. This should be applied in dry weather only, at the rate of two or three ounces to the square yard; it would leave no stain when finally dissolved, but would probably have to be renewed once a year between March and May.

Names of Fruits.—*Altho.* 1, Striped Beefing; 2, Lewis's Incomparable.

Names of Plants.—*E. C.* A Viola: the flower is of a pleasing dark colour, but the value of the plant can only be determined by its habit of growth and freedom of flowering.—*W. A. T.* 1, probably Veronica Hulkeana; 2, Acacia armata.—*D. M. S.* A variety of Fritillaria pudica.—*R. H., Devon.* 1, Clianthus puniceus; 2, Sophora tetraptera var. microphylla (syn. Edwardsia microphylla); 3, Skimmia japonica.—*W. P.* Carum segetum, the Corn Parsley.—*S. M. G.* 1, Calathea ornata var. regalis; 2, C. ornata var; 3, Maranta leuconeura var. Kerchoveana; 4, Dracaena Goldieana; 5 and 6, Caladiums; we cannot undertake to name garden varieties as they vary so much under different conditions; 7, Colocasia antiquorum; 8, Alocasia Thibautiana; 9, A. longiloba; 10, Codiaeum variegatum var. inimitabilis; 11, C. Weismanni; 12 and 13, C. Lucy; 14, C. Golden Ring; 15, Panax fruticosum var. Guilfoylei; 16, Begonia argenteoguttata; 17, Coleus Blumei var. Whittoni; 18, Selaginella uncinata; 19, S. Emmeliana; 20, S. Braunii.—*R. G.* Hippeastrum equestre var.; a native of South America, but it has been introduced to tropical Africa, where it is now very common.—*W. O. W.* 1, 2, 3 and 4, not recognised, send when in flower; 5, Pteris serrulata; 6, P. s. cristata; 7, P. Wimsettii; 8, Nephrolepis Piersonii; 9, Adiantum formosum; 10, Pelargonium, probably P. Manglesii; 11, Anemone nemorosa; 12, Primula acaulis Double Rose; 13, Adiantum cuneatum variety; 14, Pteris cretica.—*A. Z.* Pyrus Malus atropurpureus.—*W. H. S.* 1, Ribes aureum; 2, probably Spiraea arguta; 3, Forsythia species (send in flower).—*W. C.* 1, Viola silvestris var. rosea; 2, V. bosniaca.—*J. W. T.* A form of Potentilla atrosanguinea.—*J. H. B.* White flowered shrub, Pieris floribunda; red-berried shrub, female form of Skimmia japonica.

Narcissus Bulbs Diseased.—*H. A. T.* The two bulbs showed very extensive damage by eelworm, and were quite worthless from the point of cure. The disease had been present some considerable time, as there was no portion unattacked and no roots had been made. The soil from which they were lifted is probably infested with eelworms by this time so that Narcissi should not be planted in it for at least three years. The disease can be controlled by treating newly acquired bulbs with hot water at 110°F. for four hours.

Peach Leaves Diseased.—*H. W.* The leaves are, as you suspect, affected with the shot-hole fungus. We do not know the specific to which you refer, but we recommend you to spray the trees at once with an ammoniacal solution of copper carbonate, and repeat the application at intervals.

Root Growing through Stone.—*C. A. H.* your specimen is interesting, but it is by no means uncommon to find roots of Couch or other plants making their ways through small holes in stones.

Rhododendron Rust.—*Attadale.* This complaint is caused by Chrysomyxa Rhododendri, which is fairly common in Europe and the United States, particularly where the Fir (Picea excelsa)—the alternate host plant of the parasite—is found. The stage of its life-history on Rhododendron leaves is not dependent on the Picea for continued existence, as the parasite lives through the winter on the old leaves. In the ordinary way there is no control; but as your infected plants are still in pots, they could be isolated and sprayed every three weeks with Bordeaux mixture. Pick off and burn the infected leaves before spraying.

Rhododendron Leaves.—*W. P.* The leaves sent are not attacked by rust disease, but are badly infested with thrips and red spider. Syringing with a nicotine or quassia insecticide may help to clear the plants of the pests.

Seedlings Failing.—*J. H. B.* The soil in which the seedlings have been growing lacks fibre, therefore a considerable proportion of the leaf-mould (which should be sterilised before use) should be mixed with the compost and a little sand may also be added.

Thatching a Summer House.—*Tenrab.* We have seen a slightly broken thatched roof mended with the same sort of material, but when the whole roof had to be re-thatched the whole of the old material was removed or sufficient of it to enable the thatcher to recover the space during a day's work. New material laid on the top of the old would sink unevenly and not assort well together. Norfolk Reeds consist of the stems of the grass, Phragmites communis. Straight straw was used in olden times for thatching, and the thick end of the straw was placed uppermost. Each layer was fixed in position with a layer of clay, each layer overlapping the previous one. The more it overlapped the thicker the thatch when completed. There is evidence that a ceiling of Norfolk Reeds in Somersetshire fixed in position with plaster, lasted one hundred years. Clay, mortar, plaster or cement would probably answer equally well for fixing straw or reeds. Heather, being shorter, and not so straight in the stem, could be more securely fixed by tying each handful to strong, horizontal laths with tarred twine. The cost per square of one hundred feet is more difficult to answer, because thatchers are few and far between at the present day, and wages are higher. Thatchers were not difficult to find in olden times, and the materials were usually procured on the estate. You would have to reckon with the cost of the cut and dried reeds or the bundles of Heather, and the carriage from a distance. With the help of a boy to hand up the material, you could probably manage to do the thatching yourself, or get a handy, local man to do it.

Thuya Growths Diseased.—*A. S.* The Thuya shoots received for examination appear to have been killed by a fungus or bacterial disease, but the pest could not be identified from the material sent. Perhaps, at a later date, fungus fructifications may appear; in such an event we shall be pleased to undertake a further examination. Meanwhile, as many of the diseased shoots as possible should be removed and burnt. The best treatment for white fly on Tomatos is to fumigate with hydrocyanic acid gas.

Vine Leaf for Examination.—*J. A. J.* The Vine leaf sent was very badly infested with red spider and thrips. These pests usually attack plants that are grown in too warm and too dry an atmosphere, therefore moister conditions should be aimed at. Syringe the vines with clear, soft water, which should be applied with force to the under-sides of the leaves as well as the upper surface.

Vine Leaves Unhealthy.—*A. C. F.* No parasites could be found on the leaves submitted, but there were indications of an insect attack some time previously. We advise you to pay great attention to cultivation and ventilation, and renew the border in autumn.

Communications Received—J. G. W.—G. Y.—G. S.—S. S.—F. L. S.—H. M.—E. S.—E. B.—T. W. C.—A. J. M.—A. R. W.—L. H.—J. H. B.—G. S. V.—R. A.—V. S.

NEW HORTICULTURAL INVENTIONS.

These particulars of New Patents, of interest to readers, have been selected from the Official Journal of Patents, and are published by permission of the Controller of H.M. Stationery Office.

Latest Patent Applications.

11,085.—Cochrane, K.—Grass edge cutting machines. April 14.
11,122.—Elliott, G. de C.—Flower-holders. April 14.
10,790.—Fowler, C. H.—Disc harrows. April 12.
10,555.—Seest, M.—Potato-diggers. April 10.
9,966.—Akers, R. E. A.—Bird-scaring device. April 3.

Specifications Published.

288,409.—Logan, Muckelt and Co., Ltd., and Watts, R.—Cloth or cover for covering seed beds and for similar purposes.
288,446.—Richardson, W.—Holder for flowers, plants and the like.
287,963.—Wilsdon, W. E.—Seed drills or distributors.
287,992.—Ludlow, E. B.—Devices for applying weed-killer.
288,117.—Pugh, Ltd., C. H., and Bull, G. F.—Means for transporting lawn-mowers.

Printed copies of the full Published Specifications may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at the uniform price of 1s. each.

Abstract Published.

285,797.—Insecticides.—Xaidan Hojin Rikagaku Kenkyujo, 31, Kamifujimae-cho, Komagome, Hongo-ku, Tokio, Japan.

Insecticides are prepared by mixing an extract of Derris root with an anhydrous and alkali-free vehicle consisting of one or more oils, fats, waxes, resins, higher alcohols, higher hydrocarbons, or higher fatty acids, together with an anhydrous solvent such as benzol, carbon tetrachloride, or trichlor-ethane. The primary material so prepared is mixed, when required for use, with a soap solution so as to form an emulsion or colloidal solution. According to examples, Derris root is extracted with ether or benzol, the solvent is recovered from the extract by evaporation, and the active substance so obtained is dissolved in a mixture of fish oil and benzol or carbon tetrachloride so as to form the primary material as a liquid, to which anhydrous "arabic rubber" may be added if a material in the form of powder is required. Specification 239,483 is referred to.

THE LATEST TRADE MARKS.

This list of Trade Marks, of interest to readers, has been selected from the Official Trade Marks Journal, and is published by permission of the Controller of H.M. Stationery Office.

SYRAX.

489,051.—All goods in Class 42, which includes fruit, etc.—L. Lambert and Company, Limited, Colne Works, High Street, Uxbridge, Middlesex. April 18.

REDOLEM.

89,285.—Chemical substances used for agricultural and horticultural purposes.—Murphy and Son, Limited, The Cedars, Sheen Lane, Mortlake, London, S.W.14. April 18.

SILBRITE.

488,873.—All goods in Class 12, which includes pruning knives, shears, etc.—Sam Mann, 29, Harrison Road, Halifax. April 4.

LITTLE GIANT.

487,896.—Garden rollers.—Benjamin Baker (Lye), Limited, King Street, Lye, Stourbridge, Worcestershire. March 28.

THE Gardeners' Chronicle

No. 2161.—*SATURDAY, MAY* 26, 1928.

CONTENTS.

Aberdeen Parks, progress at 366
Aldenham House Gardens 366
Alpine garden—
  Saponaria bellidifolia 370
  Veronica incana ... 370
American Gooseberry mildew 365
Apple Case-Bearer ... 385
Apple grafting experiments 385
Apple Orleans Reinette 385
Beetles injurious to timber 366
Black Currants, certification of 367
Cherries, importation of 365
Cider-tasting day at Long Ashton ... 386
Cultural memoranda—
  Auriculas 385
  The hardy Fernery... 385
  Tree Ferns and Palms 385
Edinburgh, notes from 373
Fruit growing, scientific 365
Fruit register—
  Apple Bushey Grove 387
"Gardeners' Chronicle" seventy-five years ago 367
Garden notes from south-west Scotland 372
Hardy flower border—
  Trollius yunnanensis 371
Indoor plants—
  Begonia nitida var. Prince Eugen ... 370
  Brunfelsias ... 370
Iris Society's dinner and outing 367
Mesembryanthemums. 365
New moon sowings ... 385
Plants and seeds into Canada, importation of 366
Research work in British Guiana ... 366
Rose trees, imported... 367
Scottish Horticultural Advisory Committee 367
Societies—
  Royal Gardeners' Orphan Fund ... 387
  Royal Horticultural 374
  United Horticultural Society Benefit & Provident 387
Trees and shrubs—
  Cytisus Ardoini ... 371
  Leycesteria formosa 371
  Rhododendron ponticum var. cheiranthifolium... ... 371
Vegetables, the medicinal value of ... 385
Water garden—
  Nymphaeas ... 370
Week's work, the ... 368
Wilde, M. Henri de... 366
Willett, memorial to William 365
Winter, the aftermath of 385
Wisley, notes from ... 372

ILLUSTRATIONS.

Begonia nitida var. Prince Eugen, 369; Florence Bigland 377
Chelsea Show: exhibits at the 375, 377, 379, 381, 383
Omphalogramma vinciflorum 373
Saponaria bellidifolia 367
Trollius yunnanenis 371
Wilde, M. Henri de, portrait of 366

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 57·1°.

ACTUAL TEMPERATURE.—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London, Wednesday, May 23, 10 a.m. Bar. 30. Temp. 45°. Weather, Wet.

Scientific Fruit Growing.

THERE are doubtless many orchards in this and other countries in which the art of cultivation is brought to the highest pitch of perfection, and those who see such masterly examples of successful fruit growing might naturally think that science can do little or nothing to bring the art to yet fuller perfection. Yet had anyone entertaining these views been present on Wednesday of last week at the annual meeting of the East Malling Research Station, he would surely have had ample occasion to reverse his opinion, and would probably have come away with his imagination fired by the vast possibilities for the development of fruit growing which sane and sustained scientific research offer. For not only were those who attended the meeting presented with a *Report*, every item of which dealt with subjects of practical and scientific interest to the fruit grower, but they were shown the scientific work which is in progress at the Station, both in the orchards and in the laboratories. It is not often that the layman is taken behind the scenes and shown in detail the machinery whereby the pageant of scientific progress is set on its laborious, slow-moving and yet sure way. It was apposite that the day of the general meeting should have been typical of spring weather with which the fruit grower has to contend—cold and raw and rainy. Yet in spite of the depressing outward conditions, the meeting was marked by an enthusiasm which even the weather could not damp. There was good ground for the enthusiasm, for although the East Malling Station is young in years, it has already achieved great things for the fruit grower, and is giving sure promise of yet greater achievement in the immediate future. Among the various lines of investigation which have already borne fruit, some are well-known to fruit growers and others of no less importance are as yet not so well-known. Everybody is aware of the work which has been done by the Station in sorting out and standardising the stocks suitable for different types of Apples; stocks ranging from extremely dwarfing types to those of amplest vigour. Most growers are also cognisant of the admirable and laborious investigations which have been made into varieties of soft fruits, such as the Black Currant and the Raspberry, investigations which promise, when they have been completed and apprehended by all nurserymen, to bring about a much-needed reduction in the numbers of varieties offered in nurserymen's catalogues, a yet larger reduction in the number of names of these varieties, and provide a safe guide to the grower in the choice of those suitable for his district. Every grower ought also to know of the mode of procedure worked out by the staff of the Research Station, whereby growers of Black Currants are enabled to eliminate reversion from their plantations. Among lesser-known investigations demonstrated on the occasion of the general meeting we may mention those on the Walnut. Of this fruit it may be said that just as Whiskerandos took an interminable time dying, so the Walnut takes an interminable time living up to the bearing stage. Not so, however, at East Malling. There the Walnut may be seen fruiting in its second year from grafting. Instead of growing seedlings and waiting for many years for fruits, you may follow the East Malling practice, graft one-year-old seedlings with dormant shoots of a suitable variety in March, and lo! in two years' the first fruits are to be had. No less important, albeit a far more intricate piece of work, is the foundation-laying of the scientific pruning of Apples and other fruit trees, including the study of the effects of pruning on quality and size of fruits—matters, of course, of the first importance to the commercial fruit grower. Lastly may be mentioned all those researches—and they are many—which seek and discover the causes of, and remedies for, the diseases to which fruit trees are susceptible. As a result of these investigations, varieties have been found which are completely resistant to Woolly Aphis, and means devised to prevent the "running out" of varieties of Raspberries owing to the insidious attack of virus disease. That results of such importance are being obtained by Mr. Hatton and his staff of research workers has led, naturally, to the Station growing into a sort of fruit Mecca, whither all good fruit growers make pilgrimage. In most pilgrimages the pilgrims are sustained, at least in large part, by the faith they carry with them, but the pilgrim to East Malling derives inspiration from the good works and scientific wonders which are performed there before his eyes.

Memorial to William Willett.—From the report of the Committee formed in 1925 to secure for the public Pett's Wood, Chislehurst, as a memorial to Mr. William Willett, we learn that their object has now been attained. The late Mr. William Willett was the originator of the daylight saving scheme. £12,000 had to be raised for the provision of a suitable memorial, to be set up in the Wood near which Mr. William Willett lived and was buried, and £12,579 17s. 2d. has now been secured, a full list of the subscribers having been published in the report. The first seventy-two acres were handed over to the National Trust in May, 1927, and the remaining sixteen acres in February of this year. The Committee acknowledge the valuable help of the Early Closing Association, who were chiefly responsible for the success of their work.

Importation of Cherries.—The Minister of Agriculture and Fisheries has made an Order regulating the importation of Cherries into England and Wales during the 1928 season. The object of the Order is to prevent the introduction of the Cherry Fruit Fly, a pest which is very prevalent in certain Continental countries, but from which English orchards are at present free. Cherries grown in France will be admitted without restriction until June 5, after which date those grown in the southern part of France will be prohibited; Cherries from central France will be admitted until June 12, and those grown in the northern departments until June 21, after which date the importation of French Cherries will be entirely prohibited. Italian Cherries imported after June 5 must be accompanied by a certificate of origin; after June 16, their importation will be prohibited. Certificates of origin must accompany Cherries grown in any other European country which are imported after June 5.

Mesembryanthemums.—The following is an extract from a very kind letter received from Professor L. H. Bailey, Ithaca, New York:—"I have been interested from the first in the monograph of the Mesembryanthemums of Mr. N. E. Brown that is appearing in *The Gardeners' Chronicle*. This is an outstanding piece of work and will aid us in the proper determination of the many kinds grown in this country, particularly on our Pacific coast. I have had the pleasure of seeing some of these plants growing in Mr. Brown's little glasshouse. The kinds that are cultivated in this country, however, mostly belong to sections of the genus that have not yet been published in *The Gardeners' Chronicle*, and I am writing to express the hope that the entire monograph will be published and completed before very long, so that we may have the benefit of it in as few volumes of the journal as possible. It happens that I am just now working on a list of the species of plants cultivated in the United States, and I shall soon need the new names for the plants heretofore known as Mesembryanthemum."

American Gooseberry Mildew.—The results of the experiments in the control of the American Gooseberry Mildew, carried out in the Bristol Advisory Province over a period of three years, have provided some very definite information for the control of this disease. A full report of these experiments appears in the *Journal* of the Ministry of Agriculture for the present month. The need for early spraying is emphasised, as also is the necessity of the grower distinguishing between the various types of suitable fungicidal material at his disposal. Application of the fungicide, particularly if of the Burgundy type, should not be deferred beyond the time of the setting of the flowers. In the west of England the mildew often appears before the flowers open, and the pre-blooming period is therefore considered the best time for the first spraying or powdering. If the mildew has appeared a "hitting" spray containing soap, applied twice, is advised; in all instances, however, account should be taken of the various qualities of the sprays used, for their weather resisting powers vary considerably. Those of a purely "hitting" type, such as soda and soap, which kill the fungus by direct contact, probably cease to be effective after the first shower of rain, while the Burgundy type, which has little effect as a "hitting" spray, resists the weather action, at least until the fruit-picking commences. Lime-sulphur is frequently stated to be the best remedy for this disease, but its application is liable to cause scorching of the leaves and a film of solid matter may be left on the fruits. Ammonium polysulphide has, however, besides being an efficient fungicide, the advantage of the use with it of soap as a spreader, and it leaves no visible deposit on the fruits. The addition of soap to the "hitting" type of spray, to increase its wetting power, is very important. Growers are warned that lead-arsenate, which may be mixed with lime-sulphur, should not be incorporated with ammonium polysulphide or sprays containing soap. It is stated that the advantages of a powder of good fungicidal value over a wet spray are numerous. All the forms of powdered sulphur used in the 1927 trials gave better control results than were obtained with spray fluids. The ammonium polysulphide spray consists of half-a-gallon of ammonium polysulphide and five pounds of soft soap, with water added to make up to one hundred gallons.

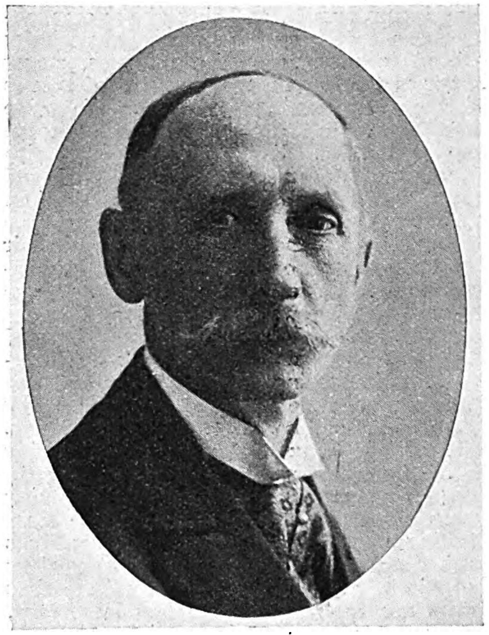
Linnean Gold Medal.—The Council of the Linnean Society of London has awarded the Linnean Society's Gold Medal to Professor Beecher Wilson, of Columbia University, New York, U.S.A.

Aldenham House Gardens.—The Gardens of Aldenham House, Elstree, Hertfordshire, will be opened again to the public this year, by kind permission of the Hon. Vicary Gibbs, on the Saturdays of July, August and September, and August Bank Holiday, Monday, August 6, on the same conditions as in previous years, that dogs will not be permitted, and that children must be under the control of an adult. One Saturday is excepted, July 21, as this date has been allotted to the Elstree and District Horticultural Society's Floral Fête, when admission to the gardens will be allowed only upon payment of the Society's entrance fees at the gates, the show being held in the park attached to the gardens.

Importation of Plants and Seeds into Canada.—Under the title of "Canada's Plant Protection Service," the High Commissioner for Canada in London has sent us the following communication prepared by the Department of Agriculture at Ottawa:—"Insect pests and plant diseases do not recognise international law or political boundaries; if they cannot travel of their own accord over vast stretches of water or great distances on land, they may be distributed by means of commodities of one kind or another. Canada is a new country, and is developing rapidly, both as regards agriculture and horticulture, and for this reason needs new varieties of plants, seeds, and plant products generally, from all parts of the world. In the days before this development took place native insects were, of course, abundant, but for the most part, with the exception of occasional sporadic outbreaks, these were kept under control by natural causes, that is, insectivorous birds, parasitic and predaceous insects and unfavourable climatic conditions. When new settlers arrived they either brought with them or sent to their home lands for favoured varieties of plants for ornamental or commercial purposes. No safeguards were taken to prevent the introduction of injurious insects on these earlier importations and it was not until the latter part of the nineteenth century that it was realised that the majority of the most serious pests prevalent on the North American Continent were of foreign origin. The rapid increase of these foreign invaders, such as the San José scale, the Gypsy Moth, and a host of others, was undoubtedly due to the fact that their natural enemies were left behind, and that the climatic conditions in their new environment were more suitable for their rapid increase. With the continued development of the country, the demand for plants of all kinds and descriptions is ever increasing, as is also the danger of importing new pests owing to the rapid means of transportation. In order to minimise the danger of further invasion of these insidious foes, precautions have been taken by the Department of Agriculture of Canada, which consist of the inspection of plants entering Canada, both before they leave the country of origin and again on arrival in their new home. All classes of plants are subject to inspection. As an illustration of the increase in this trade, it may be of interest to state that in 1910, when the inspection service was inaugurated, two-and-a-half million plants were examined, whereas in 1927 over thirty-six million passed through the inspectors' hands. During this time many new and serious foreign pests have been intercepted, and it has been necessary in certain cases to destroy entire shipments of plants.

Bury Hill Gardens, Dorking.—Lt.-Col. Barclay will open his grounds at Bury Hill, Dorking, on behalf of the Nursing Association, on May 30 and June 13. Admission 1s.

M. Henri de Wilde.—Extremely gentle in speech and action, M. de Wilde is, nevertheless, an unusually clever man and a strenuous worker. He has been the Director of the Public Parks and Gardens and Plantations of the City of Ghent since 1926, and was employed previously in several foreign countries, after a course spent at a horticultural college and the study of natural sciences at the Ghent University. It is as designer of the great Ghent Quinquennial Exhibitions that M. de Wilde has been brought into contact with horticulturists of many countries, all of whom have appreciated his work and the assistance he has always been willing to give them. We have pleasant recollections of many associations with M. de Wilde, and it is a pleasure to state that his anxiety and willingness to assist the Committee of the British Section at the recent Ghent Show won for him the highest regard of those immediately and intimately connected with the work of that section. In Belgium he has received high honours in recognition of the services he has rendered to the horticultural industry of his own land.



M. HENRI DE WILDE.

Awards to Narcissi at Wisley.—The following awards have been made to the undermentioned flowers by the Council of the Royal Horticultural Society, after trial at Wisley:—Award of Merit: Narcissus Tunis, Div. 4a, sent by Mr. P. D. Williams; and N. Glorious, Div. 8, sent by Mr. J. L. Richardson.

Progress at Aberdeen Parks.—Marked results are anticipated from the scheme prepared by Mr. William B. Clark, Superintendent of the Aberdeen Public Parks, for the removal of the present very inefficient glasshouses, and the erection on a more convenient site of a group of glasshouses on the most up-to-date and modern lines. For years Mr. Clark has been handicapped, as was his predecessor, by the present dilapidated condition of the propagating houses, but this is soon to end. Over £4,000 has been set aside for the work, and the whole is expected to be complete and in full working order by late autumn. The work now required from the Superintendent of Aberdeen's Public Parks is enormous, compared with what was thought adequate half-a-century ago. Scores of acres have been added to the parks department and these have mostly to be supplied from the Duthie Park, where Mr. Clark resides. In addition, there are ever so many little oases scattered throughout the city that have to be planted. Collectively, these mean a large extent of ground. Mr. Clark is to be heartily congratulated on the sympathetic manner his scheme was received by the Links and Parks Committee and the city Council. Intense interest is being taken in Mr. Clark's project by horticulturists, professional and amateur, in and around Aberdeen.

Beetles Injurious to Timber.—The destruction caused by mining beetles in the roof-timbers of Westminster Hall will be remembered by our readers, and the more recent case of damage done to the beautiful, carved, timbered roof of the Great Hall at Hampton Court Palace (which has been closed for six years as a consequence), has again brought forcibly before the general public the destructive habits of the several beetles that are injurious to timber. This type of injury—and it is widespread—is emphasised by Mr. J. W. Munro in a thirty-eight page booklet issued as *Bulletin* No. 9 of the Forestry Commission. We congratulate Mr. Munro on his freely and excellently illustrated production* which should enable interested people to identify the nineteen species of beetles which are chiefly responsible for damage to timber. The species are grouped as Longicorn Beetles, Pin-hole Beetles, Powder Post Beetles and Furniture Beetles, and this grouping is a further aid to identification. The object of the work is to "describe the insects and the damage done and to make suggestions regarding preventive and remedial measures," and that object has been successfully attained by Mr. Munro.

West Park, Wolverhampton.—The many visitors to the annual Floral Fête held in West Park, Wolverhampton, will be pleased to learn that among the several improvements in the Park in recent years, none is so thoroughly appreciated as the very handsome conservatory provided out of the profits of the Floral Fête. Mr. W. Willis, Superintendent of the Wolverhampton Parks, is to be congratulated on the beautiful central gardens which are always a source of attraction to residents and visitors, and upon the fine display of spring flowers in the conservatory.

Research Work in British Guiana.—Yet another step has been made in the advancement of agriculture and horticulture in British Guiana by the publication of the *Agricultural Journal*, Part I of the first volume of which has just been issued. It takes the place of the *Journal of the Board of Agriculture of British Guiana*, which first appeared in 1907, and is the outcome of the complete re-organisation of the Department. A review of the evolution of investigational work relating to agriculture in British Guiana, which had its root in the Botanical Garden and Station at Georgetown, Demerara, the construction of which was commenced in 1879, is contributed by Professor J. Sydney Dash, B.S.A., the Director of Agriculture for British Guiana. At the outset, these gardens were apparently designed as a centre of botanical and other investigations, and also as attractive pleasure grounds. As early as 1881, Mr. G. S. Jenman, then Government Botanist and Superintendent of the Gardens, started experimental work with Sugar Cane, fodder-grasses, Coffee, Cacao, fibres, Pineapples and other fruits, principally Mangoes, but including even Grapes. These trials were later extended to include Rice, Bananas, Rubber, Balata and other forest products. Jenman introduced large numbers of plants, many of which, although of no use commercially, were of great value from an ornamental point of view. A collection of Palms was started and at the present day they form one of the most prominent features of the

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* Forestry Commission *Bulletin*, No. 9. Beetles Injurious to Timber, by J. W. Munro, Hon. M.A., D.Sc., His Majesty's Stationery Office, Adastral House, Kingsway, W.C.2. Price 1/3 net.

Gardens. Mr. Jenman was also responsible for the planting of the city with ornamental trees, and he established the popular Promenade Gardens. He started what is now recognised as an important meteorological station; and what is undoubtedly one of the most permanent memorials to his untiring zeal, energy and devotion to duty—is the Herbarium which he started. He was assisted in this work by Mr. J. F. Waby, previously of the Trinidad Gardens, and by Mr. Ward, who went to British Guiana direct from Kew in 1886, rose steadily from the post of assistant gardener to that of Agricultural Superintendent, and retired in August, 1926. In 1901, the Board of Agriculture was established, and the death of Jenman in 1902 marked a new phase in botanical and agricultural development in the colony. He was succeeded by Sir John Harrison, who was appointed Deputy-Chairman of the Board, and entrusted with the administration work. Later, the Department of Science and Agriculture was created, Sir J. Harrison becoming director. So the work of development proceeded, entomology and mycology in turn receiving attention; live-stock came under the activities of the department; a Sugar-cane experimental factory was established; mineralogy and geology were embraced, and the death of Sir J. Harrison, in February, 1926—a serious blow to the colony—marked the closing of the second phase. The third commenced with the accession of Professor J. Sydney Dash to the post of director, in July, 1927, and the work of completely re-organising the department is now in progress; a perusal of the first publication of the new *Journal* will show how well this is being carried out, to the betterment of the numerous interests and industries of the colony.

Severe Weather in France.—In our issue of April 28, p. 291, we published a statement that the days set apart to commemorate the three saints, known as the Ice Saints, St. Mamert, St. Pancrace and St. Servais, were dreaded by gardeners on the Continent on account of the severe weather usually experienced on those days. It is therefore rather interesting to record that a very severe spell of cold weather has been experienced in France during the past weeks, which seems to confirm the statements made in that notice.

Certification of Black Currants.—The Ministry of Agriculture announces that it is prepared to undertake the inspection of stocks of Black Currant bushes intended for sale this season, and to certify them if found true to type and apparently free from "reversion." They cannot certify freedom from diseases other than "reversion," but certificates will not be issued to stocks which are obviously unhealthy. The fees for inspections will be on a sliding scale; a minimum of £1 will be charged for any number of bushes not exceeding 5,000, rising to £3 10s. for 100,000, with an additional payment of 10s. for every 50,000 in excess of the 100,000 bushes. A fee of 1s. will be payable for each original certificate, and 3d. for each copy certificate. Forms of application, together with an explanatory memorandum, may be obtained from the Secretary, Ministry of Agriculture, 10, Whitehall Place, London, S.W., and growers desirous of availing themselves of the offer should make application before June 16. A list of the names of growers whose stocks have been certified will be issued by the Ministry at the end of the inspection season.

Imported Rose Trees.—It is announced that an application for an Order in Council under the Merchandise Marks Act, 1928, to require the marking with an indication of origin of imported Rose trees, has been referred for enquiry to the Standing Committee set up under the Act by the Minister of Agriculture and Fisheries, the Secretary of State for the Home Department and the Secretary of State for Scotland, acting jointly. Attention is called to the fact that under the provisions of the Act, while the Committee in every case referred to them must consider whether the goods should bear the indication of origin at the time of sale or exposure for sale, they may also, at their discretion, consider and report upon the question whether such goods should bear an indication of origin at the time of importation. The date of the enquiry in this case will be announced later. Any communication with regard to the matter should, however, be addressed, so early as possible, to Mr. H. J. Johns, the Secretary of the Standing Committee, 10, Whitehall Place, London, S.W.1.

Scottish Horticultural Advisory Committee.—With a view to making it more fully representative, the Scottish Horticultural Advisory Committee has recently been augmented by the addition to its membership of Mr. Thomas Robertson, The Nurseries, Alloway, Ayr; and Mr. Alexander Thomson, Director, Messrs. George Pegler and Co., Ltd., Aberdeen. With the approval of the Governors of the three Colleges of Agriculture at Glasgow, Edinburgh and Aberdeen, it has also been arranged that the Senior Horticultural Lecturer of each College will attend the meetings of the Committee. Any matter of importance affecting the horticultural industry may be brought before the Scottish Horticultural Advisory Committee through any of its members or by a communication addressed to the Secretary, Board of Agriculture for Scotland, York Buildings, Queen Street, Edinburgh.

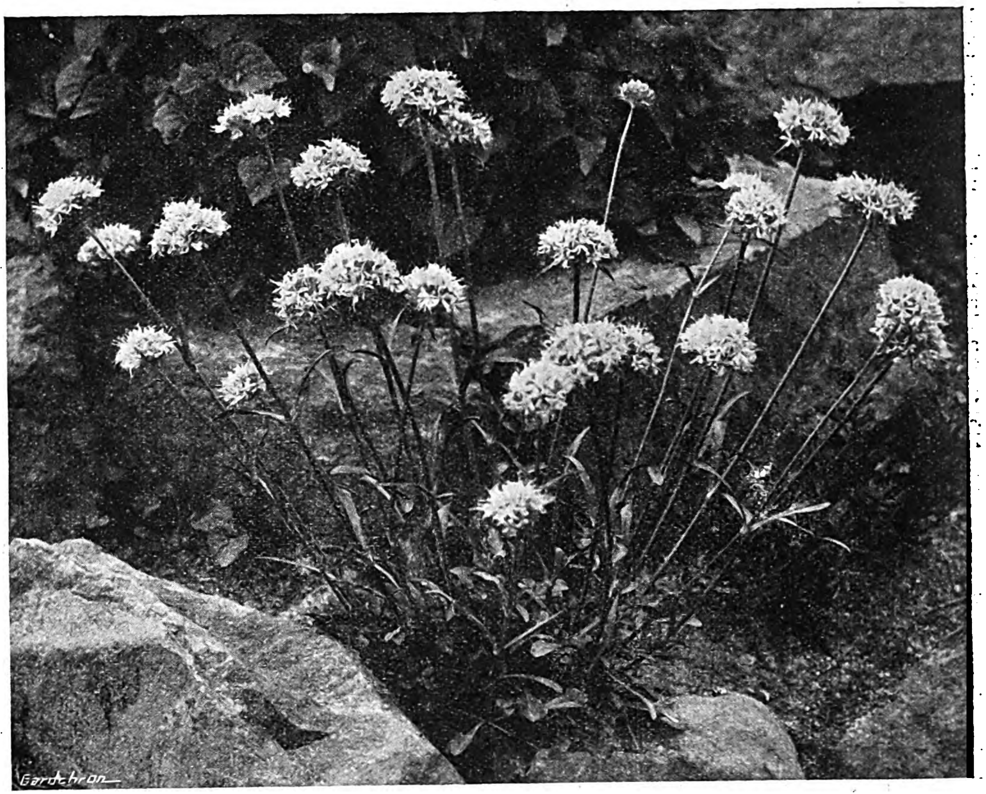

FIG. 171.—SAPONARIA BELLIDIFOLIA.
(see p. 371).

Iris Society's Dinner and Outing.—The Committee of the Iris Society proposes to hold a dinner on the evening of the Iris Show on June 8 provided sufficient members notify their intention to be present. A trip to Wisley—probably on Saturday, June 2—has also been suggested, but this outing will also be determined by the number of those who notify their desire to attend. Notification should be sent at once to Mr. G. L. Pilkington, Lower Lee, Woolton, Liverpool.

Appointments for the Ensuing Week.—SUNDAY, MAY 27: Wakefield and North of England Tulip Society's show (four days); TUESDAY, MAY 29: Royal West Renfrewshire Horticultural Society's Council meeting. THURSDAY, MAY 31: Paisley Florists' Society's meeting; Bideford Horticultural Society's meeting. FRIDAY, JUNE 1: Bridport Chrysanthemum Society's meeting. SATURDAY, JUNE 2: Darwen Agricultural Association's show; Blackburn Horticultural Society's meeting and lecture.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Horticultural Society's Spring Show.*—On Saturday last, the first day of spring, the Horticultural Exhibitions at Chiswick opened for the season. The sun was brilliant, and the wind biting; but the tender, transparent tint of the trees in their early foliage was welcome to the eye, and the exhibition itself magnificent. None appreciate such a scene with so much genuine feeling as our high-born dames; and their admiration was unbounded. None can judge more correctly of the true value and import of such exhibitions than English gentlemen and there was not one who did not feel that the talent displayed by the exhibitors was something of which a great nation may be proud. Absolute novelties were sparing. Mr. Veitch was, however, able to produce, for the first time in Europe, the celebrated Lilium giganteum of India, in admirable beauty; and its specimen furnishes conclusive evidence that the proportions of this plant are, in old specimens, quite as colossal as report has made them. Mr. Van Houtte produced a particularly handsome Aphelandra, with deep green leaves, beautifully marked with white stripes; it, however, received no reward, having been exhibited in a wrong class. The Garden of the Society contributed a small specimen of Rhododendron Edgworthi, one of the Sikkim kinds, now flowering for the first time. Its blossoms were of the largest size known in the genus; cream colour, a little dashed with pink, and more fragrant than words can describe; their prefume, although intense, yet so aromatic, as to be in no wise oppressive to even the most delicate organisation. Other plants, of less interest, and all the further details of this extraordinary "show," will be found reported in another column. The number of visitors during the afternoon was 2,381. *Gard. Chron., May* 21, 1853.

Publication Received.—*Scientific and Practical Gardening*, by Walter P. Wright; George Allen and Unwin, Ltd., Ruskin House, Museum Street, W.C.1; price, 3/6 net.

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN MOORE, Manchester.

Sophronitis grandiflora.—If a number of these brightly-coloured Orchids are grown, a succession of flowers may be had over several months. The flowers should remain in perfection for many weeks, but unless the plants are in robust health it is not advisable to allow the flowers to remain on the plants for long periods. Late-flowering specimens have been providing a fine display recently. After the flowers are removed, repotting may be done, for new roots are produced from the partly-developed bulbs. Very little compost is required for the small-growing species; finely-cut Osmunda fibre and Sphagnum moss, with broken charcoal added, makes a suitable rooting medium. Shallow pans are the best receptacles and the plants thrive when suspended near the roof-glass in the cool house, if shaded from bright sunshine. They should receive all the available light during the winter months.

Tall-growing Dendrobiums. — Tall - growing varieties, such as D. fimbriatum, D. Dalhousieanum, D. moschatum and the autumn-flowering D. Hookerianum, are commencing to grow, and repotting, if required, should be done now. Well-drained pots are the best receptacles, and a compost of coarse A.1. fibre and Osmunda fibre, used in a rough state, with a little chopped Sphagnum-moss, adding broken charcoal to keep it open, is suitable. It should be pressed firmly about the thick roots without injuring them, and the bulbs should be secured to stakes to prevent root disturbance. They should be grown in a warm house in a position where there is ample room to allow the long growths to develop. A humid and buoyant atmosphere is essential, and as the roots and growths advance copious supplies of water may be needed at the roots until growth is complete, when a drier and cooler position should be afforded them. Members of the evergreen section such as D. densiflorum and its varieties, D. suavissimum, D. aggregatum, and the remarkable D. Brymerianum, have made an attractive display recently, for they are well adapted for decorative purposes. As the flowers fade, new growth commences, and attention should then be given to the roots. For these strong-growing evergreen varieties, larger pots should be used than for the deciduous sorts. Remove all decayed roots and useless pseudo-bulbs; a good open compost is required, and it should be pressed firmly amongst the roots. The small-growing members, such as D. aggregatum, may be grown in shallow pans or fastened with a small quantity of fibre and Sphagnum-moss to a Teak-wood raft, suspended from the roof. These Orchids thrive in a light position in the intermediate house; they should be shaded from bright sunshine and sprayed frequently during suitable weather.

THE KITCHEN GARDEN.

By ALLAN FALCONER, Gardener to the Cheadle Royal Mental Hospital, Cheadle, Cheshire.

Brassicas.—The continued cold, drying winds and night frosts have been detrimental to the welfare of all plants which were raised under glass for early planting, and very little growth has been made since planting them in this district. Watering had to be resorted to immediately after planting, and where such plants as early Cauliflowers were put out from pots, attention should be paid to keeping the ball of soil moist, or premature flowering may be the result. Avoid using water direct from the tap, for if provision is made to "take the chill off," much benefit may be derived. I believe that a great deal of harm is done by the free use of cold water, and only in extreme cases should it be applied. Provision is necessary in every garden for a constant supply of warm water, when precautions may be taken to use it at the correct temperature. If the plants are damped overhead with cold water they soon present a starved appearance, and it is courting disaster to use it on such subjects as exhibition Onions, Leeks, Celery, etc. If watering is resorted to during dry spells weak soot or manure-water should assist the plants in their early stages, but the free use of the hoe is preferable to the watering-can. Many people wait for showery weather before planting, and no doubt it is an advantage, but in the case of Brassicas I prefer planting immediately they are ready, even if dry conditions prevail. Some few years ago, I proved this during a very dry summer. All the Brassicas were planted and watered, once only, and the hoe was used frequently between them during a continued drought. The resultant plants were much better than those of other growers, who had watered constantly with cold water. Directly moist conditions prevail, a light application of nitrate of soda should benefit many of the crops which have been checked by the cold spell, especially Peas and Brassicas that were sown in their permanent positions.

Runner Beans.—Plants that were raised early and potted on should now be ready for planting in a sheltered position. They should be protected at night until all fear of frost is passed, and a few Spruce boughs placed along the rows should guard them against cold winds.

Exhibition Carrots.—Attention should be given to the thinning of the young plants as they become large enough, reducing them to one in each hole; use the hoe frequently, and spray them occasionally to protect them from the Carrot fly. Those sown in frames for early use should be thinned, and the later sowings on mild hot-beds may be thinned partially while quite small.

Celery.—Plants raised for early use may now be planted in trenches as previously advised, but protection may be necessary, as any check to the plants is liable to result in the premature production of flowers.

General.—The soil between Potatos should be stirred well, and a good dusting of soot may be applied preparatory to earthing them up so soon as ready; if possible, earth the Potatos early in the day so that the soil may dry out before the evening, for should frosts occur the freshly earthed-up Potatos may suffer. Thin all the crops as they become ready, and use the hoe not only as a means of destroying weeds, but to aerate the soil and conserve the moisture.

PLANTS UNDER GLASS.

By J. COUTTS, Assistant Curator, Royal Gardens, Kew.

Euphorbia pulcherrima.—The Poinsettias, which are still deservedly popular for winter decoration, should be propagated now by securing the young growths when they are three or four inches in length. These should be taken off with a heel and the cut surface dipped in powdered charcoal to check the flow of latex. Each cutting should be inserted singly in a small pot, and without delay placed in a close, warm case with plenty of bottom heat, for success depends largely on preventing the cuttings from flagging. If difficulty is experienced in rooting them in this manner, propagation may be effected easily by inserting portions of the old stems, some two or three inches in length, as cuttings; they root readily, and the ultimate plants are almost as good as those raised from young shoots. So soon as they are rooted the plants should be removed from the case and placed on a stage close up to the roof-glass; pot them as they require it, using a compost of a good medium loam with enough sand to keep it open and porous, and a six-inch potful of bone-meal to every bushel of soil. No leaf-soil is necessary as the production of firm growths is very essential. In their younger stages, Poinsettias enjoy a temperature of 65° to 70°, but as they increase in size they should be accustomed to cooler conditions, and during the summer they may be grown in a cold frame, taking care, however, to close the frames early to conserve the moisture and sun-heat. When they have filled their flowering pots with roots they require liberal feeding, and during September should be removed to cooler quarters. The ordinary scarlet variety is still the most useful and showy, although the white and rose-coloured, and the double varieties are useful to provide contrasts.

Brunfelsia macrantha.—This subject, sometimes called Franciscea macrantha, is a useful plant for the greenhouse or conservatory. Although it is, together with other species, generally treated as a stove plant, it flowers in wonderful profusion at this period of the year, small plants in sixty-sized pots being covered with flowers. Brunfelsias may be propagated now by means of cuttings, young shoots being selected for this purpose, although if necessary the older portions may be used. During their growing season they require a temperature of 55° to 60°, and during the winter they should be kept fairly dry at the roots, for they are more or less deciduous. If planted in a well-drained border in a warm greenhouse they soon make large specimens which are very showy when in flower. Other useful Brunfelsias are B. americana, the sweetly-scented flowers of which open yellow and then turn white; B. calycina, B. uniflora, B. eximia and B. Hopeana.

Anopterus glandulosus.—This handsome evergreen, greenhouse shrub, although at one time a common plant, seems to be very scarce in cultivation, although it is propagated easily at any time during the summer by means of half-ripened shoots, which root readily under a bell-glass in a cool house. It requires plenty of root room and an ample water supply, and it should, if possible, be planted in a well-drained border. The plant is hardy out-of-doors in the west of England, and a young plant came through last winter safely at Kew without any protection other than being planted at the foot of a warm wall; winter conditions at Kew are by no means ideal. Its upright panicles of white flowers and dark green, glossy foliage, make this plant a very beautiful subject when in flower. It is a native of Tasmania and was introduced so long ago as 1823.

HARDY FRUIT GARDEN.

By T. E. TOMALIN, Gardener to the EARL OF BESSBOROUGH, Stansted Park, Emsworth, Sussex.

Newly-planted Fruit Trees.—Trees in new plantations should be inspected to insure that no injuries are being caused by the stakes or ties, for permanent injury is often done by the rubbing of the tree against its support during windy weather. Late-planted trees often suffer from dryness at the roots during periods of prolonged drought, therefore watering should be done thoroughly and copiously if necessary, first removing the mulching material. A few hours after watering, the surface of the soil around the tree should be hoed lightly, and the mulch replaced. This method ensures a lasting effect, and it is seldom necessary to repeat the watering, unless the drought is very prolonged.

Suckers.—Many kinds of fruit trees produce growths from the stock at this season of the year, and these, if allowed to persist, become a serious menace to the health of the tree, by intercepting the food passing up from the roots. These suckers should be removed completely, for cutting them off at ground-level, although checking them for a time, ultimately tends to increase the evil by multiplying their number.

Spraying.—Young fruit trees should be watched closely now for signs of caterpillars, and if these appear the trees should be sprayed with an arsenate of lead wash at the rate of 1 lb. of the paste to twenty gallons of soft water. The second spraying against scab should be performed when the flower petals have fallen; lime-sulphur at summer strength may be used. If Bordeaux mixture is used, it has been found safer to increase the alkaline constituent for this spraying, the ratio being 4 lbs. of copper sulphate, and 6 lbs. of quick lime, to forty gallons of water. Even then it is wise to proceed very cautiously by spraying single trees of different varieties, before spraying on a large scale.

FRUITS UNDER GLASS.

By T. PATEMAN, Gardener to SIR CHARLES NALL-CAIN, Brocket Hall, Hertfordshire.

Peaches and Nectarines.—Early Peaches in pots, which have had their crops collected, should be hardened gradually, to be stood out-of-doors later in a somewhat shady position. It is not advisable to stand them in full sunshine for the first few weeks, but to select a partially shaded spot until such time that the foliage becomes hardened to outside conditions. The roots should never be allowed to suffer through lack of water, and during the summer months light feeding will be found beneficial.

Successional Crops.—Where the fruits are approaching ripeness, the borders should receive an abundance of water, and the fruits should be exposed to the sun. It is advisable, when the fruits are nearing maturity, to shade them very lightly, but this should, of course, be removed when all the fruits have been gathered. Less syringing is required as ripening proceeds, and an abundance of air on all possible occasions should be admitted during the day. A night temperature of about 60° to 65° on cold nights is sufficient.

Late Houses.—The trees should receive attention with regard to the tying, training and thinning of the growths. Retain the strong, medium-sized growths and tie them about four inches apart. Attend strictly to such details as ventilation, watering, keeping the trees free from insect pests, and the judicious thinning of the fruits. This latter operation may be carried out safely forthwith.

THE FLOWER GARDEN.

By J. G. WESTON, Gardener to the DUKE OF DEVONSHIRE, Chatsworth, Bakewell, Derbyshire.

Summer Bedding.—The present time is one of the busiest seasons in the garden, for in many places the summer bedding is an important feature, so that planting should be proceeded with so soon as it is considered safe to do so. Where the beds have been filled previously with spring-flowering plants they should be cleared, enriched with well decayed manure, and if the weather is dry, thoroughly watered on the day previous to planting. By this date most of the bedding plants should be well hardened and fit for planting out, but it is advisable to leave the more tender subjects, such as Salvias, Heliotropes and Fuchsias until the more hardy subjects are planted. Specimens in small pots or shallow boxes deteriorate quickly, especially during hot and dry periods, therefore planting should not be delayed. Make the plants firm, and when the soil is fairly dry again, run the Dutch hoe over the surface to produce a fine tilth. It is a great mistake to water flower beds continually, but a light spraying overhead in the late afternoons of hot days greatly assists the plants to become established.

Pentstemons.—If spring bedding has delayed the planting of these subjects it should be attended to at the first opportunity. Apart from their use in conjunction with other plants for formal bedding, Pentstemons are splendid subjects for massing in large beds or borders, and by the use of several good varieties, brilliant effects may be obtained. They respond readily to liberal treatment and thrive in a moderately moist soil enriched with manure. If the weather is hot and dry, plentiful supplies of water should be given to prevent them receiving a check, which may materially reduce the size of the flower-spikes.

Antirrhinums.—These are general favourites for summer bedding, and few plants give better results for the amount of labour required to grow them successfully. Although responding well to good treatment, they are suitable for planting in poor soils, and in hot and dry situations. Antirrhinums have been improved immensely of late years, and there are now many shades of colour, while the heights range from a few inches to three or four feet.

Bambusas.—B. fastuosa is one of the best of this section. It is of quick growth, very hardy and quite distinct. B. palmata has the largest foliage of any Bamboo; it spreads rapidly when in a good position, and should be planted in the wild garden or woodland, for where there is plenty of room for development it quickly covers a large area. These should be planted as advised in last week's issue (p. 351).

FOR NORTHERN GARDENERS.

By A. T. HARRISON, Gardener at Jordanhill Training Centre, Glasgow.

French and Runner Beans.—These two useful vegetables are not grown extensively in Scotland, but here and there quite useful crops have been gathered in an average season, and if a warm border may be reserved for the dwarf varieties there is every prospect of success. Seeds of both climbing and dwarf French Beans should be sown now, taking the usual precautions not to bury them too deeply. Seeds of Runner Beans should be sown in well-prepared soil, or, as is often practised south of the Tweed, the seeds may be sown thinly in boxes, the seedlings being planted out in double rows when all danger from late frosts is past. As an ornamental plant, the Runner Bean or Scarlet Runner is worthy of wider cultivation, for the flowers are attractive, and being rapid of growth it may be used as a temporary covering for arbours and pergolas.

Beets and Garden Swedes.—The main crop of Beets should be sown on soil that has not been manured recently, but has been well cultivated for the former crop. A dressing of artificial manure, consisting of superphosphate of lime and sulphate of potash, should be forked or hoed into the ground before drawing the drills, and for Swedes the addition of sulphate of ammonia should be of great assistance. The garden Swede is a useful winter vegetable, and when grown well is better for table use than its coarser relative from the fields. Earlier sown Beets of the round or globe types are now growing freely; the soil between the rows should be stirred frequently during dry weather, and the seedlings thinned at an early stage. Birds are sometimes troublesome when the plants are young, but an occasional dusting with lime, which should do the foliage no harm and in course of time will be washed into the soil, should deter them.

Spring Bedding Plants.—When the spring-bedding flowers cease to be ornamental they should be removed, and the soil made ready for the summer bedding plants. Narcissi may be lifted and, if desired, planted either in nursery rows, or direct into the open woodland, where they may be expected to give of their best for many years to come. Tulips and Hyacinths are not so satisfactory, but in an open sandy soil quite excellent results may be obtained for several seasons. The carpeting plants should be lifted carefully and transferred to the reserve garden, taking care that they do not suffer for want of water during dry spells; later, they may be increased by division or cuttings to produce sufficient stock for next season, but this work should not be unduly delayed.

Late Chrysanthemums.—The final potting of late Chrysanthemums is often delayed during the busy season, therefore, if the plants are already well-rooted in their six-inch pots, and have been hardened by exposure on all suitable occasions, they should be repotted into their flowering pots now, and set together closely for a few days to enable them to be watered easily, and to be protected should frosts threaten at night. The compost should consist of turfy loam, leaf-soil, wood-ash and sand, with bone-meal or a special Chrysanthemum manure added.

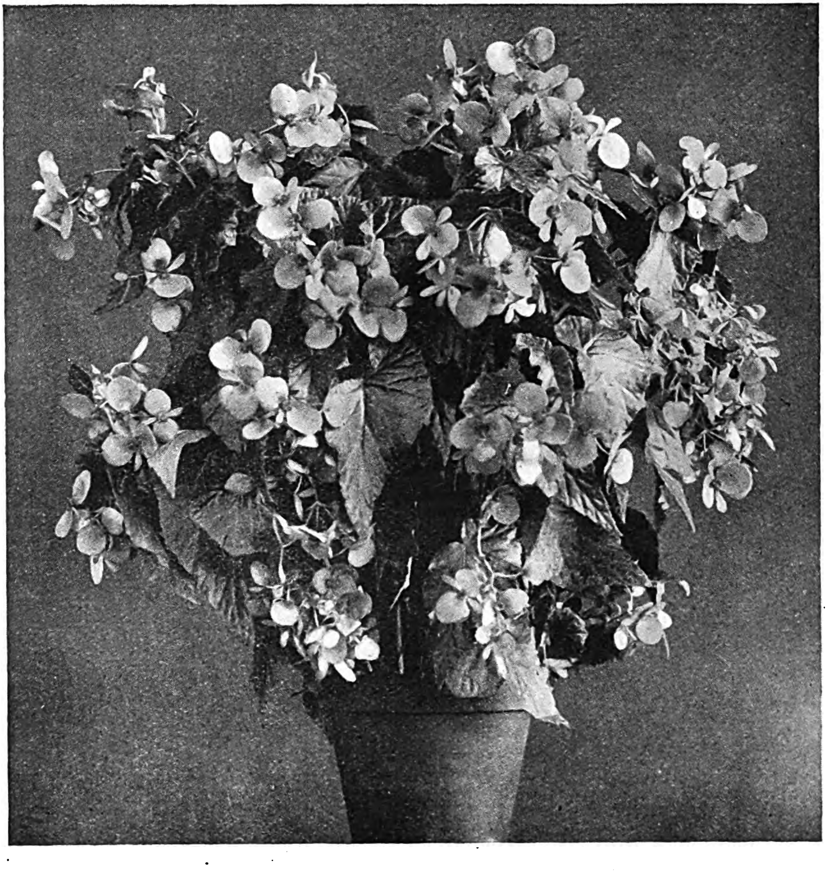

FIG. 172.—BEGONIA NITIDA VAR. PRINCE EUGEN.

(see p. 370).

INDOOR PLANTS.

BEGONIA NITIDA VAR. PRINCE EUGEN.

THE earliest Begonia recorded in Europe is probably Begonia nitida. It was grown at Kew in 1777, but for a long time was seldom seen outside botanical gardens. Here, in Sweden, it has now and then appeared, but very sparingly, and at last was practically lost. About thirty years ago it was grown in the Royal Gardens at Haga, near Stockholm, but subsequently disappeared. A prominent amateur and lover of flowers, H.R.H. Prince Eugen of Sweden, has preserved a form of it from extinction, and this is now popular, for it is in flower nearly the whole year through. Mr. Hugo Karlson, Gamla (Old-) Uppsala, near the University town of Uppsala, has several houses filled with plants of this Begonia which promises to become a good commercial subject.

Well-grown plants form bushes two feet in height and about one-and-a-half feet through, with many stems bearing beautiful, dark-green, velvety, shining, dense foliage and a profusion of blooms, which under good culture may be so much as three inches across, and of a splendid salmon-rose colour.

Its chief value consists in the possibility of having it in flower at any time of the year. If given a resting period of three or four weeks, cutting the plants half down and repotting them in leaf-mould and some rotted cow-manure, they soon start growing again, and in about a month or six weeks are again loaded with hundreds of blooms. The nearer the plants are kept to the glass the richer is the colour of the flowers.

The Begonias of the Gloire de Lorraine type have their chief flowering period in the autumn, but the principal flowering time of B. nitida Prince Eugen is the spring. The flowering period may, however, be delayed by removing the flowers and buds.

In winter the plants should be kept in a temperature of not lower than 57° to 60°. Propagation is effected by means of top-cuttings, which root readily; leaf-cuttings do not appear to have the power of making any shoots, although often rooting. Plants in three-inch pots should bloom and before the end of one year well-grown specimens have the appearance shown in Fig. 172. *Ivan Ortendahl, Curator, Botanic Garden, Uppsala, Sweden.*

BRUNFELSIAS.

THESE form one of the freest flowering groups of plants in cultivation, and some of the species have been cultivated in English gardens for nearly a century. They are all of easy culture and thrive in a rich, open compost of equal parts of loam, leaf-mould and sand. They flower usually in spring on the ripened growths of the previous year, but often flower again, if vigorous, on the growths made after the normal flowering period is over. They are best grown as warm greenhouse or sub-tropical plants, and should be treated liberally when in full growth by feeding with good artificial manure or cow manure.

Brunfelsias use the available food in pots quickly and require feeding to enable them to give good results. It is when they are planted out in a border with a free root-run that their full beauty is reached. Under such conditions they may make annual growths a foot or more long, which should flower along their whole length during the following spring or early summer, and remain in flower for so long as three to four months. They all withstand pruning, and may be kept in shape by the use of the knife during their period of growth, as well as after flowering. Old plants which have become exhausted may be renovated and given a new lease of life by being repotted, using a fresh, rich soil. They should then be placed in the stove and kept under close, moist conditions until re-established. The best time to do this is in January or February before growth commences.

Cuttings of all the species (and their varieties) root readily at any time of the year and when growths about an inch in length are available, they should be placed in a sandy compost in brisk heat, in a close frame or under a bell-glass.

The best of the genus is undoubtedly the large-flowered variety of B. calycina, known as macrantha. This has large violet flowers up to two-and-a-half inches in diameter, and the plant has the additional value of being extremely free flowering. Other desirable varieties of B. calycina are var. eximia, with flowers one-and-a-half inch in diameter, mauve to violet, fading with age to nearly white; var. floribunda, which has violet flowers, one-and-a-half inch across, and rich, shiny leaves, while it is very free-flowering; and var. Lindeniana, a distinct and handsome form with rosy-lilac flowers and slightly bullate leaves. This latter variety thrives under much cooler conditions than all the others, and may be grown successfully in an ordinary cool greenhouse.

Two species, B. latifolia and B. Hopeana, have sweetly-scented, violet flowers, and are rather rare in cultivation; they are both dwarf in habit and free-flowering.

Another species with sweetly-scented flowers is B. undulata, but the blooms in this case are pure white, some two inches in diameter, and with a long, slender tube four inches in length, usually slightly curved in the upper part. One of the commonest species in gardens, especially in sub-tropical countries and also the warmer parts of south Europe, is B. americana, the flowers of which open white and shade with age to yellow. It is a free-flowering subject and grows freely, making a large bush quickly. This species is the only one which produces its seeds freely under cultivation, and these are frequently offered in some of the southern European catalogues. B. calycina var. eximia fruits occasionally. *C. P. R.*

THE WATER GARDEN.

NYMPHAEAS.

WATER Lilies should be planted during May or June, the latter part of the former month being, perhaps, the ideal period; they thrive in full sunshine, in still or very slightly running water, and should be submerged to a depth of from eighteen inches to two feet; the smaller-growing varieties grow and flower admirably in about one foot of water.

Nymphaeas enjoy a rich soil, such as may be provided by good yellow loam, enriched with decayed cow manure. If it is desired to establish plants in deep water, planting in baskets is an efficient and simple method. Firm planting is essential, and the crowns should be just visible above the soil surface; it is very important that Water Lilies are not subjected to any root disturbance while in a dormant condition. Adequate protection from water-fowls should be afforded. Nymphaeas are now so numerous that it has become a most difficult matter to make a small selection, as all are so beautiful.

The following Nymphaeas are first-rate sorts for a pond of large or moderate dimensions:—Marliacea albida, white, sometimes stained pink; Marliacea carnea, soft rose, shaded white, very fragrant; Marliacea rosea, deeper in colour than the preceding, and deliciously fragrant; Murillo, rose and white; venusta, pink; Conqueror, coral-red, marked with white, and with a median green line on the outer petals; Gloriosa, rose-crimson, fragrant; James Brydon, rosy-crimson; sanguinea, crimson-carmine, orange-red anthers; Marliacea chromatella, primrose-yellow, fragrant; Solfaterre, yellow, suffused with rose, and shaded with orange-red; and Marliacea Ignea, a vivid red.

For growing in tubs and small tanks, N. Laydeckeri fulgens, N. Laydeckeri lilacea, N. odorata alba, N. odorata sulphurea, N. pygmaea alba, N. pygmaea Helvola, and N. odorata suavissima may be recommended.

When the plants are received from the nursery they should be placed in water at once, and shielded from the sun's rays, prior to placing them in their permanent positions at the earliest possible opportunity. *Ralph E. Arnold.*

ALPINE GARDEN.

SAPONARIA BELLIDIFOLIA.

ALTHOUGH this Soapwort can lay no claim to ranking amongst the most beautiful subjects for the alpine garden, it is sufficiently attractive, rare, and difficult of culture to merit its inclusion in the gardens of connoisseurs.

It is closely related to Saponaria lutea, which it resembles in the colouring of the flowers, but it is considerably taller in habit, varying, according to the conditions under which it is growing, to from eight to twelve inches or more in height. These stems arise in numbers from tufts of spathulate, oblong leaves, and are terminated by congested clusters of pale yellow, dark-anthered flowers (Fig. 171, p. 367).

S. bellidifolia should be planted in a warm, sunny and well-drained situation, in the moraine, or in loamy soil containing an abundance of chips. *F.*

VERONICA INCANA.

BEAUTIFUL as many of the Veronicas are, few may be described as lovelier than Veronica incana, which combines attractiveness of foliage with the beauty of its flowers. When planting it, consideration of the effect of its foliage is necessary, for it is very effective when well-placed. It is free-growing and forms large clumps of toothed, oblong, silvery-grey leaves, above which during late summer, erect spikes eight inches or more in height, of rich, dark purple blooms, are produced.

This subject should be planted in drifts or beds in open and sunny situations, and it delights in deep, loamy soil. Seeds are invariably produced freely, but division is probably the best means of increasing it, and rooted shoots, if planted in the spring, should make fine plants to flower the same year.

Although this Veronica is usually treated as a rock garden subject, it may be used with equal effect in the herbaceous border, in conjunction with other dwarf subjects, near the front.

Unlike other Veronicas of this type, this member of the family seems to come fairly true from seeds, and plants that I have raised show little or no variation either in their foliage or in the colouring of the flowers, although they vary sometimes in vigour of growth.

SCORZONERA PURPUREA.

ONE hardly associates the Salsafies with the rock garden, yet there is at least one species whose beauty entitles it to such consideration, namely, Scorzonera purpurea (syn. S. rosea). In nature, it is rare and local in its distribution, and is to found inhabiting open meadows.

It forms tufts of narrow, grass-like leaves, and produces, during the summer months, clear pink, Dandelion-like flowers on slender stems about six inches high, over a prolonged period.

S. purpurea has, unfortunately, the bad habit of dying during the winter, but if planted in a sheltered but sunny situation, and in light, deep soil, through which its tap-root may penetrate easily, it may be successfully retained through several seasons, especially if it can be afforded overhead protection from the winter wetness. It is seldom listed in catalogues, but seeds are sometimes procurable, from which a stock may be raised.

VANCOUVERIA HEXANDRA.

NOT unlike, and, in fact, closely related to the Epimediums, this beautiful plant may be employed for furnishing cool, semi-shaded positions in the rock garden. It delights in leafy or peaty loam which, however, should not be of too heavy a nature, for it has the habit of dying out if the soil is inclined to be wet.

It spreads by creeping root-stocks and produces masses of soft, bright green, Fern-like leaves, which are light and dainty in appearance. Above these, during the summer, are borne delicate sprays, on stems about nine inches in height, of small, cream-coloured flowers; the whole plant is remarkable for its daintiness. It is by no means difficult to grow, and when once established, may be left undisturbed for a number of years, while division affords the most ready means of increasing it. *M. W.*

TREES AND SHRUBS.

RHODODENDRON PONTICUM VAR. CHEIRANTHIFOLIUM.

Although an old variety, and one of considerable merit and distinction, this Rhododendron is seldom seen in gardens and rarely offered by nurserymen. It appears to be a form of R. ponticum, but possesses features which are peculiarly its own and unmistakable. As the varietal name implies, the stiff, leathery leaves resemble those of a Wallflower, being small and narrow, often undulated (hence the synonym R. undulatum), and they are gathered in compact rosette-like heads at the ends of the twigs.

The flower clusters appear in April or May. These are only some two or three inches across, the closely-packed, prettily-crimped blossoms being a fresh pink and white, with only a slight tendency to the ancestral mauve. Small as these trusses are, they are in proportion to the size of the leaves, which seldom exceed half-an-inch in width. Moreover, the bush itself does not appear to exceed four or five feet in height, and it produces an abundance of blossom, every twig often bearing a truss of bloom. The foliage is a pale soft green, and it assumes an almost golden hue during the winter months.

R. p. cheiranthifolium is undoubtedly an attractive subject, especially to those who have an appreciation for out-of-the-way shrubs. *A. T. J.*

CYTISUS ARDOINI.

Never too plentiful, yet in commerce at a comparatively reasonable price, Cytisus Ardoini is not frequently cultivated in the average rock garden. It has been a long time in cultivation and is so delightful, as one of the dwarfest Brooms we possess and one of the most beautiful of dwarf shrubs for the rock or wall garden, that it should have a much wider distribution in this country. It hails from the downs above the Mediterranean, where, we are told on good authority, the goats browse upon it and prevent its seeding. It may produce seeds in this country, but I have no recollection of ever having seen it do so, although plants have come under my observation in different districts.

C. Ardoini is of rather trailing habit, about six inches high, and bears bright yellow flowers during May and June. It appears to delight in a sunny position in a light soil, and I have never seen it finer than in a low retaining wall, facing south, in a Scottish garden, where, between the stones it had attained a good size. This Cytisus is hardy, and deserves a little more notice than has hitherto been bestowed upon it. Planting may be performed in early spring or autumn. *S. Arnott.*

LEYCESTERIA FORMOSA.

Although by no means uncommon in gardens of this country, this handsome, semi-woody, deciduous plant might be used much more extensively, for it may be employed for a variety of purposes. It may be grown in the mixed shrub border; is useful for planting in semi-shade beneath overhanging trees, or it may be grown in association with, and treated as, herbaceous plants, for the best effects are obtained from plants that are cut back to within a few inches of the ground annually. It may be increased by division or raised from seeds, which it usually produces in large quantities.

Each season it sends up numbers of stout, erect, hollow stems, up to four feet in height and sometimes considerably higher, which are smooth and covered, especially in the early stages, with a glaucous bloom. They are well-furnished with handsome, opposite leaves, ovate in shape and tapering to long, slender points, which vary considerably in size and may be anything from two to six inches in length; they are deep, rich green on the upper surfaces and greyish beneath.

The flower spikes are produced over a fairly long season, from June onwards, at the ends of the shoots or in the axils of the terminal leaves. The flowers themselves, which are white, tinged with purple, and sessile, are not very conspicuous, but they are borne in whorls, each of which is furnished with leaf-like bracts of a rich claret colour. The flowers give place to large, fleshy, bright reddish-purple berries, well filled with seeds, which ripen during September and October, and are apparently very popular with pheasants.

Leycesteria formosa is a native of the Himalayas, and was introduced so long ago as 1824. It is hardy, at least the root-stock is seldom damaged by severe weather, and well repays planting in moderately rich, well-worked soil. *M. W.*

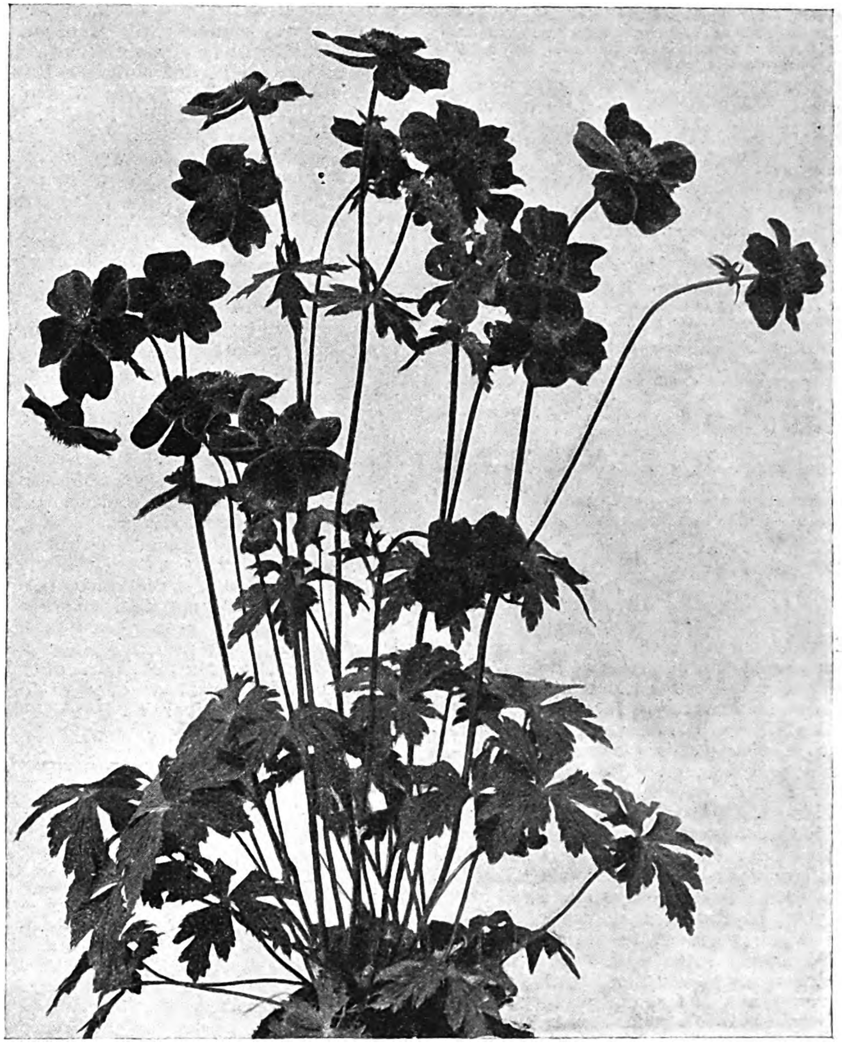

FIG. 173.—TROLLIUS YUNNANENSIS.

HARDY FLOWER BORDER.

TROLLIUS YUNNANENSIS.

This delightful Globe Flower was, I believe, originally collected by Purdom, and introduced by Messrs. James Veitch and Sons some eighteen years ago. For some reason it has never become so common as the various forms of T. europaeus, or even T. pumilus, and this is rather remarkable when we consider its fine qualities. It is finer in all its parts than T. pumilus; the scapes are branched, and the bright golden-yellow flowers, which are nearly flat, are fully three inches across. In the centre of the five large segments is a circle of paler yellow stamens, the flower reminding one of an exceptionally glorious Buttercup. This species has been grown at Castleford, Chepstow, for several years, where it attains a height of two feet, and several single specimens had over twenty flowers open at one time. They are grown in a sunny and rather damp position, and a dozen plants in full bloom make an extremely effective group. Moreover, they bloom in late June and July when other members of the family have finished flowering for the season. The plant illustrated (Fig. 173), however, was grown in the ordinary flower border, but last summer was rather moister than usual. The bright green foliage is both ample and pleasing to the eye, and altogether T. yunnanensis is a subject that should be grown in most gardens, especially those where a moist border or bog can be provided.

T. yunnanensis rather resents root disturbance after it attains the flowering stage, so when they are planted it is advisable to leave them alone for several years. When division is desirable the work should be carried out in the spring, but a ready means of propagation is by seeds. These are produced in quantity, and if sown directly they are ripe, should germinate readily in a cold frame. Trollius seeds have a reputation of germinating somewhat irregularly, and seedlings appear even over a period of twelve months after sowing, but I have never found this species to act in that way.

T. yunnanensis was recently figured in the *Botanical Magazine*, t. 9143, and it is stated there that the plant is apparently quite common in the alpine meadows of north-western Yunnan, where it flourishes in moist, loamy soil. This affords a clue to its successful cultivation, because I have found that if planted in a peaty bog, the plants do not attain the size and vigour of those afforded a loamy soil, to which has been added some decayed cow manure. *T. W. Briscoe, Chepstow.*

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GARDEN NOTES FROM SOUTH-WEST SCOTLAND.

THE prudent amateur will never go among his shrubs and herbs in spring without a pencil and pocket-book, for the colours of many flowers throughout that season are so strong, and even strident, that if harmony and agreeable contrast are to be secured, this is the time to decide on judicious re-arrangement. The disastrous effect of neglect in this matter was very apparent in a notable collection which I visited last year. It contained some very interesting and beautiful shrubs, whereof the fine quality was marred in more than one place by discordant colouring. For instance, no sensitive eye could fail to be offended by the flambent orange of Berberis Darwinii clashing against the towering crimson of Rhododendron altaclarense. It is indeed hard to find a neighbour at which this splendid Barberry will not swear unpleasantly; for I know of no plant of similar stature producing dark blue or violet flowers at the same season to cool the conflagration.

Discord is not the only evil to be guarded against. In my own grounds I made note lately for the removal of a good plant of Rhododendron Dr. Stocker, standing in front of a large Gean Tree or Wild Cherry. Both were in full flower, and the rivalry of white was to the advantage of neither; whereas the snowy sprays of Exochorda grandiflora serve to enhance the fiery tone of Rhododendron neriiflorum. Similar effect on a lowlier scale of growth may be secured by placing Rhododendron haematodes beside Osmanthus Delavayi—not too near each other, else the Osmanthus will prove too robust for its neighbour.

One must possess his soul in patience for several years before seedlings of Rhododendron Augustini display their colours. When they do so, those of a washy, indeterminate hue should be ruthlessly thrown out; whereas those with flowers of Periwinkle-blue are simply priceless, and never show to better advantage than beside the delicate sulphur bells of R. campylocarpum. Charming harmony may be assured by grouping the American R. Vaseyi against a background of the Warminster Broom—Cytisus praecox. The tender roseate flowers of the former appear before the leaves, and blend delightfully with the pale lemon of the latter.

In the herbaceous border, spring flowers gain much in effect from judicious combination and contrast. Leaving out of account florists' Tulips, Hyacinths and other things used for bedding-out, and treating only of plants intended for permanent settlement, it may be noted that a very rich effect may be had from a broad, mixed band of Brodiaea (Triteleia) uniflora, Muscari comosum and Anemone fulgens. This combination may not make much show in the first season after planting, but increases in beauty in each following year. Aubrietia looks best on a bank or retaining wall; one can hardly have too much of it, provided no place is given to the disagreeable ruddy tints displayed by some varieties. The cool lavender and rich violet hues whereof this generous Crucifer affords such variety agree well with most other flowers. In our garden Narcissus Bulbocodium, with golden flowers, thrives ill and dies out, whereas the lemon-coloured form N. B. citrinus, flourishes vigorously and spreads freely in self-sown drifts. It accords well with Anemone apennina and the pale lavender of Aubrietia graeca, and suffers nothing from the intense scarlet of Tulipa praestans scattered among it. Equally brilliant is Tulipa linifolia, which may be placed in contrast with Adonis vernalis and Omphalodes cappadocica.

Selection from the innumerable and annually increasing varieties of Narcissus suffer much from indiscriminate planting, and can only be seen at their best when each variety is kept in its distinct group or drift.

In the early days after its introduction to this country, Viburnum bitchuiense suffered from confusion with V. Carlesii and was pronounced very inferior in merit to that choice species. Indeed, I was told that it was not worth growing, and consequently did not obtain it. But Mr. Scrase Dickens assured me that this was a mistake, and very kindly gave me a couple of plants, which have fully justified his opinion of the quality of this species. While it bears a general resemblance to V. Carlesii, its growth is more free and open and the flower corymbs are more lax than those of that species. It is certainly well worthy of cultivation. *Herbert Maxwell, Monreith.*

NOTES FROM WISLEY.

IF the present period at Wisley is described as Rhododendron time, it may equally well be called Primula time, for in addition to the wealth of bloom provided by the Rhododendrons and Azaleas which fill the wild garden, there is a no less brilliant show of bog Primulas, which occupy the ditches and carpet almost every open space in this part of the gardens. Primula japonica and P. pulverulenta, of which there are many fine forms, are mainly responsible for this display, but species such as the beautiful yellow P. helodoxa are flowering remarkably well, and in a few years' time when they have increased—as they are doing rapidly—they should make the picture at this season of the year even more striking. Another bright Candelabra Primula which, however, is smaller than the former, is P. chungensis. The flowers are yellow with a brick-red corolla-tube and reverse. In the Muscaroid section P. atricapilla, with pale lavender flowers, which are pleasantly scented, is in bloom, as also is the considerably deeper coloured P. Giraldiana. Mention must also be made of P. Florindae, a recent discovery by Captain Kingdon Ward, plants of which, although not yet in bloom, are already conspicuous by reason of their huge pink and green rosettes, many of which exceed twelve inches in diameter. Some of the largest may be seen in the wettest part of the ditch separating the wild garden from the field garden. On the bank of the ditch a pretty mauve-flowered Rhododendron, R. oreotrephes, is in bloom.

In the field garden itself many of the ornamental Pyrus and Prunus species have now passed their best, but plants of Pyrus Toringo are still in full bloom. Many of the latter, however, present a peculiar appearance, since the frost has browned the flowers, but at the same time has not caused the usual shrivelling of the petals. Other trees and shrubs of interest include a standard specimen of that curious graft hybrid, Laburnum Adami, upon which may be clearly seen the three types of bloom. It produces the pinkish flowers of the hybrid, as well as the yellow and the purple flowers of the parents—L. vulgare and Cytisus purpureus.

Near the entrance to the field garden is a group of Lilacs, among the best of which is the rosy-purple-flowered Pasteur, its single blooms measuring nearly one inch across. Other dark-flowered varieties include the well-known Charles X, J. de Nessmaker and Congo, the flowers of which are particularly rosy when they first open but soon turn to grey. Double flowers are seen in the pale mauve Victor Lemoine and a handsome white-flowered variety in bloom is Vestale.

In the section devoted to Heaths, Erica arborea alba and the handsome pink-flowered E. australis are in bloom. Associated with these are clumps of double Gorse and Brooms. Among the latter are many good varieties of Cytisus scoparius, such as C. s. Andreanus and C. Daisy Hill with cream and red flowers. A dwarf form of Genista hispanica is also conspicuous with its blaze of yellow, while near the pond are some feathery bushes of a pink-flowered Tamarisk, Tamarix tetrandra.

On the walls of the laboratory the natural Order Lardizabalaceae is well represented. In the majority of species belonging to this Order the flowers are comparatively inconspicuous, but are followed in some cases by an ornamental and edible fruit. Their chief value, however, lies in their decorative foliage. A good example is seen in Holboellia latifolia, which produces unusual shoots often exceeding ten feet in length, and bears both staminate and pistillate flowers, which are pale green in colour and are fragrant, particularly at sundown. Closely related are Akebia quinata, with purplish flowers, and A. lobata, with long racemes of somewhat smaller blooms. Yet another climber with ornamental foliage but inconspicuous blossom is the Japanese Actinidia Kolomikta of which the staminate form is in flower. The young shoots are prettily variegated with large patches of white and pink.

The Lily pool, near the laboratory, which contains Nymphaea James Brydon, has been emptied, owing to a slight leak in the cement, and the opportunity has been taken to add manure and replant the Lilies at a higher level, as they did not do particularly well last year, probably owing to their having been planted too deeply.

A pretty corner of the gardens which has been improved by the recent alterations, is the short Rose walk which leads from the main Rose borders to the greenhouses, and is enclosed by tall Hornbeam hedges. This has been planted with Briars and Rose species, many of which have now made fine plants. Rosa Hugonis is seen here to perfection, nearly all the shoots, some exceeding seven feet in length, being decked from top to bottom with charming yellow blossoms. The sweetly-scented double white form of R. rugosa is also in bloom, together with R. altaica, whose white flowers are followed black fruits.

In the trial of Bearded Irises, a few early-flowering varieties are in bloom. One of the very first is Yellow Hammer, but the colour is not very clear. Among the dwarf section, Mars, with pale purple flowers, is flowering well, as is Dolphin, a blue, intermediate variety. Another attractive Iris is Blue Boy with violet flowers which have a fine blue beard. The Kniphofia trial would appear to be run on "knock-out" lines, as only a small proportion of those originally planted seem to have survived; not many that remain look particularly robust, and no doubt the severe winter is largely to blame. A few herbaceous plants, such as Aquilegias and Lupins are in bloom in the new herbaceous borders in the flower trial grounds, but the recent long spell of dry weather has not favoured the growth of newly-planted material.

In the rock garden the moraine and the surrounding rock beds are now looking exceptionally bright. Here are blooming the pale pink Geranium napuligerum, Antennaria minimum, with red flowers; Aethionema Warley Rose, and dwarf shrubs of the fragrant Daphne Cneorum. Pentstemons are also to be seen, such as P. Menziesii var. Scouleri, with mauve flowers, and the still dwarfer P. Roezlii, with cherry-red blooms. Flowering in the rock faces are numbers of plants of Haberlea Ferdinandi-Coburgi and Wulfenia carinthiaca, with its deep blue racemes; while by the side of the rock pools are large masses of Tiarella cordifolia, often called the Foam Flower, which name exactly describes its appearance, even if it is not as euphonious as the Latin one. A curious plant in flower, which is of more interest to botanists than to horticulturists, is Ephedra helvetica, which is growing out of a rock crevice. It makes a low shrub and has apparently leafless branches, like the Horse-tails, which bear a naked ovule. The formation of the alpine meadow on the laboratory side of the rock garden has now been completed. Bold outcrops of stone have been formed, and in the grass are to be found Cranesbills, Primulas, Camassias, Hemerocallis nana and varieties of Astilbe crispa.

The alpine house has now lost much of its early splendour, although the liberal sprinkling of many handsome varieties of Saxifraga Cotyledon imparts a graceful appearance to the display. Ramondias in pans are in flower, including the beautiful flesh-pink Wisley Seedling. Outside the house is a trial of dwarf Phloxes, among which are some extremely low-growing varieties of P. subulata. Of the taller varieties, one of the very best is Phlox pilosa, which has been covered with pink flowers in abundance for several weeks and seems likely to last for some time. *J. E. Grant White.*

NOTES FROM EDINBURGH.

Perhaps at no other season of the year does the garden hold so much interest as at present. Week by week, attention is directed to one or other of our favourite plants in the hope that it may surpass last year's record for beauty, or show an increase in the number of flowers. The present season is somewhat later than usual and has deprived us of many early flowers in May, but it has its compensations in that less damage has been done by late frosts. Deciduous trees and shrubs are nearly fully clothed and present wonderfully effective tints. Wild Cherries, Crab Apples and Lilacs in flower blend well with the numerous shades of green surrounding them at this season.

Numerous beautiful species and varieties of the genus Rhododendron have been introduced recently, and on account of their beauty, graceful appearance and habit they are regarded by many as the most popular flowering shrubs. Amongst the May-flowering species, R. callimorphum is interesting. It is a native of west Yunnan, with very bright red buds and delicate pink, open flowers. R. calostrotum, also from north-east Upper Burma, is of a deep pink shade and worthy of attention. R. Vaseyi, in the Azalea group, comes from the mountains of north and south Carolina. This beautiful species is very showy and never fails to make a display of pink or white flowers, which are borne in great abundance. R. euchaites, another Chinese species, bears brilliant scarlet flowers which are remarkably attractive, and is a prime favourite. R. ambiguum, from western China, is most effective, and its loose habit shows the soft yellow flowers off to advantage. R. Luscombei carries many fine blooms while hybrids, such as Coombe Royal, Ivery's Scarlet and Glory of Littleworth are most beautiful plants. R. verruculosum, R. telmateium, R. cantabile, R. rupicolum, R. drumonium and R. fastigiatum are dwarf and useful for the rock garden. At present all are flowering magnificently.

Unusual interest has been taken in Meconopsis grandis this season. In a sheltered bay facing north, two dozen two-year-old plants have produced some wonderful, large, blue flowers. The flowering stems are about three feet tall and carry their handsome single blooms high above the foliage. M. simplicifolia (Bailey's form), M. integrifolia brevistyla and M. quintuplinervia are others of the family showing good results.

Year by year, the Primula family is becoming more and more popular in gardens, and rightly so, as numerous species, varieties and hybrids are of great beauty and well adapted to suit the requirements of everyone who wishes to adorn woodlands, meadows or lake-sides. Large groups of the Candelabra section are suitable for such phases of gardening, and the following species will be found very useful:—P. pulverulenta, P. japonica, P. Beesiana, P. Bulleyana, P. helodoxa, P. sikkimensis, P. Florindae, P. Wilsoni, P. vittata, and one of the Navales section, P. chionantha. In the section Muscarioides, P. Littoniana, P. deflexan, and P. muscarioides, are very effective for thick grouping by the pond side or in damp situations in the rock garden.

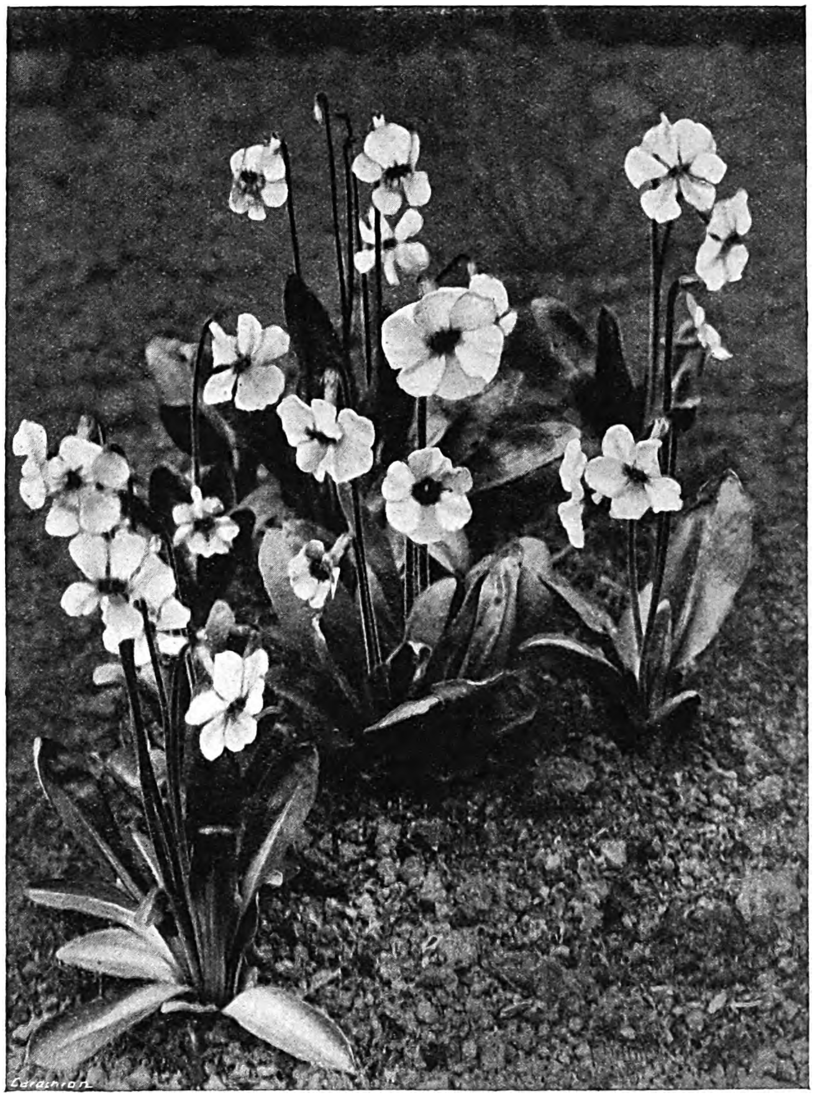


FIG. 174.—OMPHALOGRAMMA VINCIFLORUM.

The genus Omphalogramma has been included in Primula by some authorities. It is, however, distinct from Primula in having a single-flowered ebracteate scape, a six-lobed corolla and peculiar seeds. O. vinciflorum at present in flower (Fig. 174) is the finest, and so far the most useful and easily-grown species. The beautiful, blue, nodding flowers are borne on stout stems a few inches above the foliage, and when seen for the first time create a good impression. This plant ought to be better known as no difficulty is found in raising it from seeds. O. Rockii is showing flower and is very near O. vinciflorum in colour and habit. O. Elwesianum and O. Farreri are also two very beautiful members of the genus, but are slightly different in corolla formation. The former is at present in flower, but the latter is past, having flowered at least three weeks ago. All of them are slow-growing, moisture-loving plants, useful for banks of streams or moist places where there is plenty of water with ample drainage.

In the rock garden, Cytisus Beanii, C. praecox and C. kewensis hang over rocky ledges and spread out their golden and soft yellow sprays. Drifts of white, pink and crimson mossy Saxifragas add to the brightness of the garden, and such plants as Cypripedium Calceolus and Daphne Cneorum album are attractive in their respective damp and dry situations.

Gentiana verna and G. acaulis, with their brilliant blue flowers, show to advantage in the moraine. The bright pink heads of Armeria caespitosa and A. maritima are contrasted with the golden yellow of Alyssum saxatile and its varieties. Large patches of Aubrietia strive with each other for pride of place and brilliance of colour. All are welcome at this time as they help to make the rock garden interesting and attractive. *A. McCutcheon.*

ROYAL HORTICULTURAL SOCIETY.

EXHIBITION AT CHELSEA.

May 23, 24 and 25.

THE weather immediately preceding judging-day at Chelsea Show was about as disagreeable as it possibly could be and entirely out of harmony with the sunshine expected during "the merry month of May." Not only were there thunderstorms, pelting rain and hail, but the temperature was very low, consequently exhibitors who had to pursue their business of completing rock and formal gardens and arranging displays of shrubs in the open, had a miserable time, and in many instances some of their choicest plants were spoiled by the tremendous downpours and very cold weather. Needless to state, the weather caused considerable delay in the outdoor operations. Moreover, the low temperature and sunless days did nothing to assist those who had the slightly pleasanter duty of arranging displays under the tents.

But, as usual, everything was ready for the judges by three o'clock on Tuesday, after a cold and windy, but, fortunately, rainless morning. Just before, and partly during judging time, Their Majesties King George and Queen Mary made a tour of the exhibition in their usual informal manner, and showed their appreciation of the exhibits by chatting with and complimenting many of the exhibitors. The Duke of Connaught, the Crown Prince of Sweden and Princess Ingrid were also present. Lord Lambourne and Mr. Gerald Loder attended Their Majesties, and other members of the Council of the Royal Horticultural Society escorted the rest of the royal party. Despite lowering skies and unpleasantly cold conditions, everyone seemed pleased, and the rain kept away.

Certain groups of judges were busy for a long time, but we believe most of them finished their duties by 5.30 p.m., and those who were on the standing Committees had time for a cup of tea before commencing to adjudicate upon novelties at 6.30. The light was bad, however, and this must have made their task unusually difficult.

The show, taken as a whole, was a very fine one, and in many respects it was one of the most brilliant held in the Royal Hospital grounds, but sunshine was needed to bring out the full value of the colours of plants and flowers. In our view, the rock gardens fell short of those seen on other occasions, while the formal gardens appeared to be more numerous and attractive, although there is an unfortunate tendency to over-elaborate these designs, and in some instances they were displays of garden ornaments rather than gardens.

The stove and greenhouse plants in the big, competitive groups were very interesting and attractive, but they should have been larger, and broadside on instead of end on to the general stream of visitors. Greenhouse flowering plants, raised from seeds, were displayed superbly by Messrs. SUTTON AND SONS, and Messrs. JAMES CARTER AND CO., while Messrs. BLACKMORE AND LANGDON'S Begonias were magnificently attractive.

Tulips and Sweet Peas contributed fine breadths of colour, as did Hippeastrums and Hydrangeas. Capital exhibits of fruits and one of vegetables were arranged by several masters of the art of cultivation. Rock gardens arranged on tables, hardy plants in great abundance and variety, the Meconopsis exhibit from Aberuchill, the Iris and Lily gardens, dazzling Azaleas and gorgeous Rhododendrons and Carnations, all added to the interest and beauty of the show.

The Orchids—the aristocrats of the floral world—filled one large tent with wondrous grace and beauty, and the Queen of Flowers—the Rose—also reigned alone in one tent near-by, but the Roses did not look very happy in their splendid isolation, and we missed their grace in the larger tents, among the other plants and flowers.

The horticultural sundries, the art and science sections, and the Primula Conference, we have neither time nor space to discuss in the present issue.

Novelties were fairly plentiful and included many notable, beautiful and interesting subjects.

The Chelsea Show was a magnificent demonstration of British horticultural skill made under unusually disheartening weather conditions; we believe it to be the coldest R.H.S. Spring Show on record. There was a recurrence of rain on Wednesday, the opening day, but this did not appear to have any disastrous effect upon the attendance during the Fellows' private view from 8 a.m. to 12 noon.

Orchid Committee.

Present: Sir Jeremiah Colman, Bt. (in the chair), Mr. Gurney Wilson (Hon. Sec.), Mr. Clive Cookson, Mr. Lionel de Rothschild, Mr. Fred K. Sander, Mr. A. McBean, Mr. Dye, Mr. S. Low, Mr. T. Armstrong, Mr. H. G. Alexander, Mr. R. Wilson Potter, Mr. R. G. Thwaites, Mr. Hatcher, Mr. J. Shill, Mr. Flory, Mr. J. Cowan, Mr. C. H. Curtis, Mr. R. Ashton, Mr. Robert Paterson, and Colonel Stephenson Clarke.

FIRST CLASS CERTIFICATES.

Laelio-Cattleya Invicta (*L.-C. tenebrosa* × *L.-C. Monius*).—A splendid hybrid with flowers of large size and wonderful substance and proportions. The colour is rich rosy-purple, with deeper royal purple on the lip, where also there is a dull orange area. Shown by Messrs. STUART LOW AND CO.

Bulbophyllum Binnendijkii.—An extraordinary species, with its large flowers arranged in a flattish circle at the end of the spike. There were eight flowers, their dorsal sepals erect in the centre of the circle, and the sepals extended and crossed so as to make a distinct pattern on the outside of the circle where the lips and petals end. The flowers are green, spotted with dark purple; the lip whitish, and stained towards the apex with reddish purple. This wonderful species is a native of Borneo. Shown by Sir JEREMIAH COLMAN, Bt. (gr. Mr. J. Collier), Gatton Park, Reigate.

Miltonia Mona (*St. Andre* × *Charlesworthii*).—In this very handsome hybrid the sepals and petals are of a rich reddish-rose colour, except that the two lateral sepals have a white area with a red-brown mark. The big lip is deep pinkish-rose, with a wide, semi-circular, white band below the deep red-brown, butterfly-like mask. Shown by FRED J. HANBURY, Esq. (gr. Mr. Farnes), Brockhurst, East Grinstead.

Odontioda Mrs. R. F. Felton (*Oda. Coronation* × *Odm. amabile*).—A dainty hybrid that has large flowers of fine Odontoglossum size and form. The spike carried ten well-arranged flowers. The ground colour is white, and this forms a wide band around the light red basal stains and markings on the sepals and petals. The small lip is white, with deep red-brown spots below the golden disk. Shown by Messrs. ARMSTRONG AND BROWN.

Odontoglossum crispum var. Harvest Home.—In this exquisitely beautiful variety the flowers are of very large size, even for O. crispum, and the margins of the petals are deeply fringed those of the sepals being less deeply cut. There is a tinge of rose on the lower sepals, and some pale red spots towards the apex of the pale yellow and white lip. Shown by Messrs. ARMSTRONG AND BROWN.

Odontoglossum Mona var. Regina (*Aphrodite* × *Fabia*).—A splendid hybrid with flowers of the largest size and fine form. The colour is deep red-brown with a few rosy-blush pencillings on the flat lip and at the base of the petals. The tiny fringing on the petals is also rose-coloured. Shown by Messrs. J. COWAN AND CO.

AWARDS OF MERIT.

Odontioda Murillo var. The Duchess.—A superb Orchid with brilliant scarlet flowers and orange-yellow stains on the wings and apex of the lip. One of the spikes carried two dozen large flowers. Shown by ROBERT PATERSON Esq. (gr. Mr. Merry), Stonehurst, Ardingley.

Cymbidium Joy Sander var. Orbis (*Ceres* × *Pauwelsii*).—In this variety the large flowers are greenish-fawn, and form an admirable setting for the large white, brown-edged lip. Shown by Messrs. SANDERS.

Odontioda Picardie (*Oda. Graireana* × *Odm. rosefieldiense*).—A lovely and graceful hybrid that gives evidence of its descent from Odm. Rossii. Only a spike was shown, and this carried eight flowers, with red, rose-tipped sepals and petals, and a blush-white lip and pale yellow disk. Shown by M. H. GRAIRE, St. Fuscien, Amiens, France.

Odontoglossum crispum var. Pearl McBean.—A beautiful form with shapely, fringed flowers of fine size; the lower sepals are faintly tinged with rose, and the lip has a large yellow area, edged and spotted with red-brown, and a white apex. Shown by FRED J. HANBURY, Esq.

Laelio-Cattleya Mrs. Chamberlain Chandler (*L.-C. Lustre* × *L. purpurata*).—In this bold hybrid the petals are rose-purple and the sepals of pale rosy-mauve hue; the lip is intense Tyrian-purple with a small, light yellow area at the base. Shown by FRED J. HANBURY, Esq.

Odontoglossum crispum The Tetrarch.—A very fine variety, with big, shapely, white flowers, and a white lip that has a pale golden base and one large, red-brown mark. The sepals and petals are lightly fringed. Shown by Messrs. ARMSTRONG AND BROWN.

Laelio-Cattleya Clarilaw (*C. Schroderae* × *L.-C. Helius*).—A gloriously beautiful Orchid that carried six handsome flowers. The colour is soft salmon-fawn, but the lip has dull gold veins and some reddish-purple stains in the throat; it is also beautifully frilled. Shown by Messrs. ARMSTRONG AND BROWN.

Odontioda Majestica var. Brilliant (*Oda. Coronation* × *Odm. Majesticum*).—In this very bold and handsome Orchid the large blooms are well placed on the stout spike that carried thirteen flowers. The colour is rich brownish-red with small markings and a wide margin of rosy-mauve. The lip has a deep golden disk, some deep red markings and a pure white apex. Shown by Messrs. J. COWAN AND CO.

Groups.

Once again the Orchids were a fine feature of the Show and they were displayed in a separate tent and arrayed around the sides so as to afford ample space down the centre. The supporting tent poles were decorated with Palms and thus their bare unsightliness was hidden.

Sir JEREMIAH COLMAN'S exhibit did not appear to suffer by reason of his displays at Ghent and New York and both he and his able gardener, Mr. J. Collier, are to be congratulated upon the successes obtained by the Gatton Park collection thus early in the season. The group contained useful Cymbidiums, Dendrobium Dalhousieanum and Oncidium altissimum along the back, while in the centre was a bold grouping of Brasso-Laelio-Cattleya Veitchii, B.-L.-C. Caligula, Gatton Park var., Miltonia Lyoth, M. Memoria G. D. Owen, M. vexillaria var. Empress Augusta, Odontoglossum citrosmum roseum and lower down, the curious Bulbophyllum Binnendijkii, and the brilliant Miltonia William Pitt. On either side were fine spikes of Odontioda Bradshawiae, var Lady Colman, O. Lambeanianum and Odontoglossum crispum xanthotes, with Cypripedium Lawrenceanum Hyeanum, and two fine plants of Dendrobium acuminatum carrying three and five spikes respectively. Bulbophyllum Fletcherianum, Cattleya citrina, Lycaste Locusta, L. lanipes, and Stanhopea ecornuta were also shown in this collection.

Frederick J. Hanbury, Esq. (gr. Mr. Farnes), Brockhurst, East Grinstead, had a large corner group pleasingly arranged. Cymbidiums were well shown and included the yellow C. Victrix and the popular C. Pauwelsii. Odontoglossums were a prominent feature and were represented by the fine O. Victory Supreme, O. crispum in variety, O Toreador, O. Orlando, O. Duke of York, O. Matador, and O. Pescatorei var. Duchess of Westminster. Burrageara Windsor was conspicuous among Odontioda Flamingo, O. Grenadier, O. Murillo, and O. Bradshawiae, while Miltonia Princess Elizabeth, M. Mona, Laelio-Cattleya Capulet and Coelogyne pandurata were other interesting plants.

The group contributed by J. J. **Joicey**, Esq. (gr. Mr. J. Mackay), The Hill, Witley, was well arranged and contained good examples of Anguloa Clowesii, Laelio-Cattleya Fascinator, Cypripedium selligerum majus, Miltonia Bleuana var. Queen Mary, Odontoglossum Salus, Aerides Houllettianum, Vanda suavis and Dendrobium atro-violaceum.

The brilliant and graceful display of Orchids made by Messrs **Charlesworth and Co.** attracted a great deal of attention. A beautiful central feature was provided by grouping Odontoglossum crispum in exquisite varieties and carrying splendid spikes, with such glorious Odontiodas as O. Lydia, O. Zarina, O. Duchess of York and O. Maureen—all brilliantly coloured. Deep hued Odontoglossums were grouped at either end and these included O. Naomi, O. eximium, O. Juliana, O. Toreador, O. Clydonia, O. Omega, O. Crethus, O. Wilckeanum aureum and many other beautiful hybrids. Very beautiful also were Odontonia Sappho (Fig. 175) with reddish-rose sepals and petals and a large, white, red-spotted lip; Coelogyne pandurata, C. Dayana, Phalaenopsis Rimstadiana, Odontonia Duchess of York, Dendrobium Dalhousieanum, Cypripedium Euryale, Oncidium macranthum and a lovely lot of Miltonia Charlesworthii.

Messrs. **Armstrong and Brown** had an unusual arrangement. The background was composed of five tall, graceful "sheaves" of Orchids in which Odontoglossums, Odontiodas and Oncidiums were arranged with Ferns and Asparagus in a most effective and artistic manner. Each of these "sheaves" would have made a gorgeous decoration in a big drawing room. In the foreground a great variety of Orchids was disposed thinly on a base of green moss, with a few small Ferns. In this collection we were attracted particularly by Odontioda Juanita var. Brilliant, O. Colinge, Orchidhurst var., O. Grenadier, O. General Haig, O. Charlesworthii, O. Cooksoniae, Fowler's var., O. Mrs. R. F. Felton-White, with bright red markings and bearing large, finely-formed flowers; Laelio-Cattleya Clarilaw, of lovely soft salmon-fawn colouring; a form of Odontioda Colinge with a spike of twenty-eight flowers; Laelio-Cattleya Domos with eight large blooms; the rare Odontoglossum crispum var. Solum; O. c. The Tetrach, of lovely form; Dendrobium acuminatum, with a couple of fine spikes; the distinct Odontioda Tangerine, and Brasso-Cattleya Alexandrina.

Messrs. **H. G. Alexander, Ltd.**, contributed a large and beautiful exhibit in which every plant was placed clear of its neighbour in a setting of moss and Maidenhair Ferns. There were very few Cymbidiums and these raised their spikes above the other plants and were represented by C. Merlin, C. Pauwelsii, C. Redcap, C. Mollie, C. Redshank, C. Lowianum concolor and C. Ivory Wings. Odontiodas were particularly well shown and a few of the finest of these were O. Lambeauana, Westonbirt var., O. Cooksoniae, Fowler's var., O. C. elegans—represented by several freely-flowered specimens, O. Bradshawiae, the brilliant O. Chanticler and the larger-flowered, equally vivid O. Radiant, Westonbirt var., O. Goodsoniae, and O. Charlesworthii. Very fine plants of Laelio-Cattleya Imperatrix Reginae, L.-C. Gladiator, L.-C. Sargon, Cattleya Mossiae, C. M. Wagneri, C. M. var. A. Dimmock, Brasso-Cattleya Digbyano-Mossiae and B.-C. Veitchii, Westonbirt var., stood out boldly in this attractive group, while other plants of merit noticed included Miltonia Westonbirt, Cirrhopetalum Collettii, Cypripedium Maudiae, C. Holdeni—shown in fine style, the flame-coloured Laelio-Cattleya G. S. Ball and two finely-flowered examples of Vanda suavis.

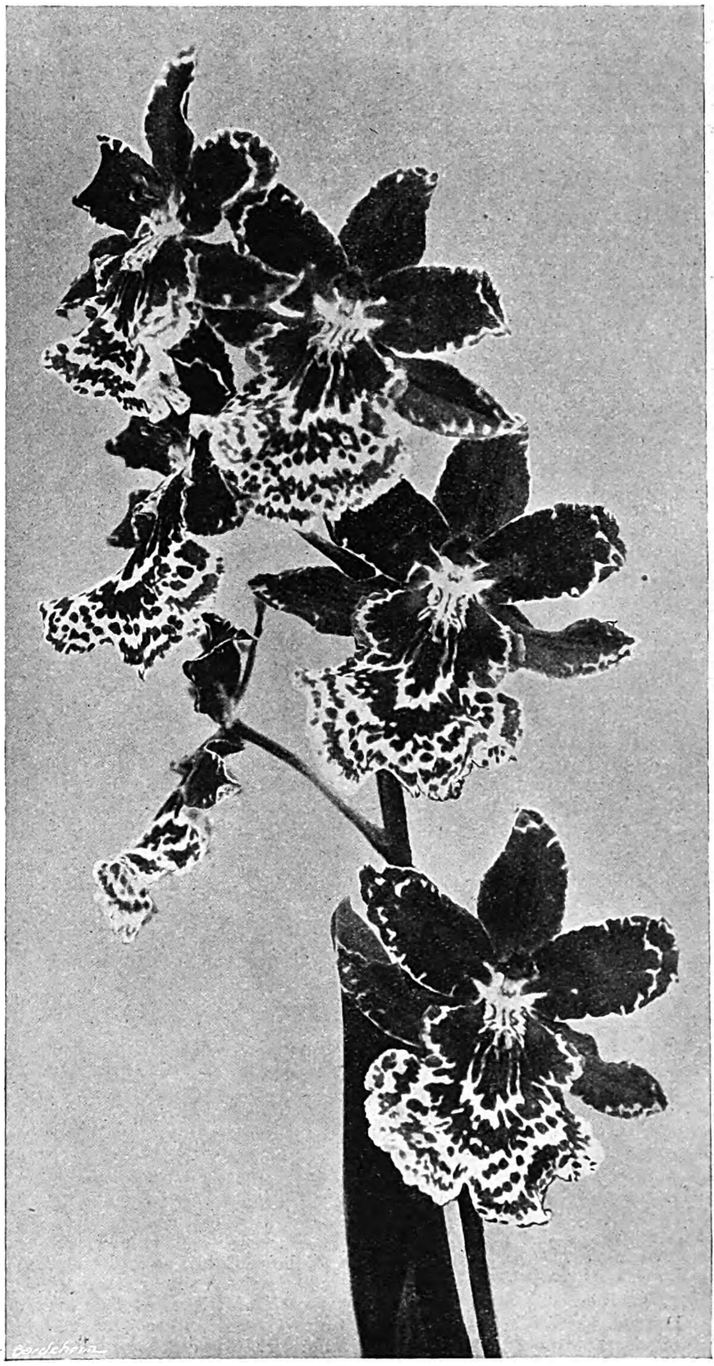


FIG. 175.—CHELSEA SHOW: ODONTONIA SAPPHO.

Exhibited by Messrs. Charlesworth and Co.

A most effective exhibit was arranged by Messrs. **Sanders** whose two tall stands, each carrying about a dozen plants of Phalaenopsis Rimestadiana, were conspicuously beautiful as every plant carried graceful spikes of large, beautiful white flowers. In the centre of their display the St. Albans firm grouped the golden Oncidium varicosum Rogersii with the mauve and mauve-purple Dendrobium Phalaenopsis, while all along the rest of the background the easily-grown Cymbidiums displayed their handsome flowers on tall spikes. Other interesting features were groups of Cattleyas and Laelio-Cattleyas, these including L.-C. Canhamiana alba, L.-C. San Juan, L.-C. Isabel Sander, L.-C. Mygdon, L.-C. Britannia, L.-C. Tenemos—betraying its L. tenebrosa parentage, Brasso-Cattleya Paladin, B.-C. Hymen, B.-C. Pallas and the lovely white Cattleya Magali Sander, with C. Juliet, and C. Unique. Dendrobium atro-violaceum, Odontoglossums, Odontonias and Odontiodas all added to the brilliance of the display, while Galeandra Devoniana, Epidendrum Hanburyi, Bulbophyllum Lobbii, and Calanthe veratrifolia were of interest among the more prominent of the botanical Orchids.

A bold and brilliant display was provided by Messrs. **Cowan and Co.**, whose central feature of Cymbidiums and cheerful Odontiodas was very attractive; the latter included beautiful examples of O. Grenadier, O. Chanticler, O. Murillo, O. Brewii, the lovely new O. Laura, O. Charlesworthii and O. Keighleyensis. Below these a few Oncidium ampliatum were very effective. The side groupings were of Miltonias—M. Lyoth, M. Venus, M. Hyeana, M. Charlesworthii, M. Isabel Sander, M. vexillaria G. W. Owen, and the handsome M. Bleuana rosea Leeana. Between the central and side groupings were exquisite Odontoglossums and among them all the new O. Mona of rich red hue was outstanding in size and colour; other good things were O. eximium, O. Margarita, Oncidium luridium, Cypripedium Gowerianum magnificum, C. callosum Sanderae, and the magnificent Odontioda Majestica var. Brilliant, with a spike of thirteen grand, richly-coloured flowers.

Messrs. STUART LOW AND CO., had a pleasing arrangement in which the taller subjects were grouped along the back portion of the display, while the whole of the foreground was occupied by low-growing subjects. The ever-popular Cymbidiums were associated with brilliant Laelio-Cattleyas, Cattleyas and Brasso-Cattleyas, Odontiodas and Odontoglossums. Isolated examples of Oncidium superbiens, with their long spikes twisted round slender supports arrested attention. In the front there were pretty groupings of Dendrobium Bymerianum, the old Bifrenaria Harrisonae, Cattleya citrina, Odontoglossum citrosmum, Cypripedium bellatulum, Pholidota chinensis—very freely flowered—a few specimens of Masdevallia Houtteana, M. Harryana, Renanthera Imschootiana, and a number of small-growing, small-flowered species of botanical interest.

Miltonias were the leading feature of the showy group staged by Messrs. BLACK AND FLORY. These fine Orchids were represented by M. Kennie var. The Sultan, with a large, blackish mask; M. Lena, M. vexillaria in variety, M. Venus and a large number of varieties of M. Kennie. Cymbidiums and Palms were used as a background, and there was an ample and pleasing setting of Moss and Ferns. In addition to the Miltonias and Cymbidiums, we noted Burrageara Windsor, with a spike of a dozen flowers, Odontonia Windsor of rich colour, Sophro-Cattleya Windsor, Cattleya Dr. M. Laroze var. The Premier, C. Heatherwood, and C. Magali Sander. A very pretty exhibit.

Messrs. SUTTON BROTHERS had a low arrangement of Orchids that was a marked contrast to the higher groupings of other firms. They filled the centre of their group with Cattleya Mendelii, C. Skinneri, Laelio-Cattleya Fascinator, L.-C. Charon, Laelia purpurata, Brasso-Cattleya Thomsoni and Dendrobium infundibulum. Odontoglossums were disposed on either side, while the foreground was occupied by Miltonias in variety, Cypripediums, Odontiodas, Epiphronitis Veitchii, Bifrenaria Harrisonae and Cattleya citrina.

Messrs. J. CYPHER AND SONS, Cheltenham, had a modest display that contained some fine forms of the old Laelia purpurata, L.-C. Canhamiana, Brasso-Laelio-Cattleya Veitchii of fine colour, Renanthera Imschootiana, Miltonias in great variety, many Masdevallias, Oncidium Papilio, Odontoglossums, Odontiodas and a few Cypripediums.

Mr. HARRY DIXON's exhibit contained a central group of Cymbidiums and isolated plants of Cypripedium macrochilum giganteum, C. A. de Lairesse, Masdevallia Houtteana, Miltonia Chelsiensis, Dendrobium Dalhousieanum, Odontoglossum Purple Gem and Cattleya Mossiae, raised well above the Odontoglossums and Odontiodas. Angulos Clowesii, Mesospinidium sanguineum, Dendrobium Parishii, Maxillaria meleagris, Eria pannea, Cypripedium Evenor and Epiphronitis Veitchii, were also shown in this group.

Floral Committee.

Present: Section A.—Mr. Henry B. May (in the chair), Mr. J. F. McLeod, Mr. Arthur Turner, Mrs. Helen Lindsay Smith, Mr. D. B. Crane, Mr. George Churcher, Mr. William Howe, Mr. W. B. Gingell, Mr. J. M. Bridgeford, Mr. Donald Allan, Mr. James B. Riding, Mr. A. E. Vasey, Mr. C. F. Langdon, Mr. Charles E. Pearson, Mr. H. J. Jones, Mr. H. R. Darlington, Mr. Courtney Page, Mrs. Ethel M. Wightman, Mr. Frank W. Ladds, Mr. R. Findlay, Mr. G. Forrest, Mr. G. W. Leak, Mr. George Monro, Mr. William Cuthbertson, Mr. D. Ingamells and Mr. W. D. Cartwright (Secretary).

Section B.—Mr. Gerald W. E. Loder (in the chair), Mr. W. J. Bean, Sir William Lawrence, Bt., Mr. R. C. Notcutt, Mr. G. Reuthe, Mr. George Harrow, Mr. J. Comber, Mr. John G. Millais, Mr. J. J. Crosfield, Mr. Amos Perry, Mr. W. G. Baker, Mr. Clarence Elliott, Mr. W. B. Cranfield, Mr. Mark Fenwick, Mr. L. R. Russell, Mr. R. W. Wallace, Mr. Eric Marsden-Jones, Mr. A. Bedford, Mr. E. H. Wilding, Mr. Hiatt C. Baker, Mr. F. G. Preston, Mr. G. Yeld, Mr. C. Williams, Mr. Reginald Cory, Lady Beatrix Stanley, Mr. F. C. Stern, Hon. Henry D. McLaren, Mr. Charles T. Musgrave and Mr. N. K. Gould (Secretary).

AWARDS OF MERIT.

Adiantum flabellatum.—A handsome Fern from California. It has large, black-stemmed fronds gracefully set with large, dark green pinnae. The end frondlet is lengthened unusually, giving a distinct appearance to the fronds. Shown by Mr. AMOS PERRY.

Azalea Magog.—This is a handsome deciduous variety, much of the Ghent type, but that the trusses and the individual flowers are larger. The colour appears to be a glowing orange, lightly suffused with rose. Shown by A. WILLIAMS, Esq., Werrington Park, Launceston, Cornwall.

Begonia Albatross.—A magnificent double-flowered variety. The perfectly-formed flowers are exceedingly large and of high quality. The flowers are pure white when fully mature, and the buds and half-opened flowers are attractively tinted with green on the outsides of the petals.

Begonia Florence Bigland.—This is another superb double-flowered variety (Fig. 176), and the flowers are even larger than those of the foregoing. The broad petals are of shining apricot colour. Both varieties were shown by Messrs. BLACKMORE AND LANGDON.

Carnation Citron.—A beautiful perpetual-flowering Fancy variety. The well-formed flowers are lightly marked with pale cerise on a pale yellow ground. Shown by Messrs. C. ENGELMANN, LTD.

Carnation Sunny.—This is another good perpetual-flowering Fancy variety, and the flowers are rather larger and more compact than those of the former. It has bright cerise lines on a pale orange ground. Shown by Messrs. C. ENGELMANN, LTD.

Cytisus Lady Moore—A graceful, free-flowering hardy Broom. The flowers are of unusually long shape and of fascinating crimson and golden-yellow colouring. Shown by Messrs. W. WATSON AND SONS.

Dicentra chrysantha.—This herbaceous plant was first discovered by David Douglas in southern California, and subsequently by William Lobb, and plants first flowered in this country in the nurseries of Messrs. Robert Veitch and Son, at Exeter, in 1852. It is not quite hardy and requires to be grown on a warm border. Its chief garden value would lie in the glaucous, Rue-like leaves, and its continuous flowering throughout the summer and autumn. The flowers are borne on fairly tall, erect panicles, and are similar in shape to those of the well-known Dicentra spectabilis, but are much smaller and of yellow colour. It is illustrated in *Bot. Mag.*, t. 7,954. Shown by LIONEL DE ROTHSCHILD, Esq., Exbury, Hampshire.

Dracocephalum speciosum.—This hardy herbaceous perennial was introduced from the Himalayas in 1877, although it has a very wide distribution. It is of very distinct appearance, and the whole plant, including the flowers, is more or less woolly. The rugose leaves are cordate and have such short stalks as to often clasp the stems. The flower stems are about a foot in height and clothed with pairs of leaves and terminated with an oblong, woolly head of leaves and blue-purple tubular flowers of smoky appearance. There are also two or three lower whorls of leaves and flowers. The plant is figured in *Bot. Mag.*, t. 6,281. Shown by Mr. T. HAY, Hyde Park.

Gazania Pavonia.—The Peacock Gazania was first introduced from South Africa in 1864, but, in spite of its great beauty, never enjoyed the popularity of Gazania splendens. The leaves are curiously pinnatifid towards the ends, and the whole leaf is very narrow and shining green, with a paler mid-rib. The flowers are rather larger than those of G. splendens and have more and slender ray florets which are of bright orange-scarlet colour. There is a small brown zone enclosing a smaller central zone of dull crimson. Shown by Mr. T. HAY, Hyde Park.

Geum Fire Opal.—This is a desirable variety. The large, fully double flowers are of bright orange colour, with a narrow margin of crimson. Shown by Messrs. CARTER PAGE AND CO.

Hydrangea David Ingamells.—This is one of the most distinct of all the handsome bright pink varieties. It has a large, very well-formed truss of flowers, while the large "petals" have distinct, short stems, and are widely toothed. The rich, glowing, pink colour is lightly tinted with shining green in the earlier stages.

Hydrangea Mrs. R. F. Felton.—Another very handsome pink variety. The flowers are somewhat star-shaped and are regularly and neatly serrated.

Hydrangea H. J. Jones.—This beautiful variety is especially recommended as a market plant and for the greenhouse. The large, shapely heads are composed of large, round, flattish flowers with entire margins. The vivid, rich pink colour is lightly flushed with rose. All the Hydrangeas were shown by Mr. H. J. JONES.

Lonicera pyrenaica.—This is undoubtedly the oldest garden plant which, of late, has received recognition from the Floral Committee, for it was, according to Philip Miller, in cultivation in this country in 1793. It is one of the best of the shrubby Honeysuckles, and makes a free-flowering bush of sturdy habit. It is deciduous and the leaves which are crowded at the apex of short purplish branchlets, are ovate-lanceolate and pale, shining green. The flowers are borne in pairs joined below the ovaries. The tubular, widely-opened corollas are pale, almost colourless and tinted with pale rose. Shown by Mr. W J MARCHANT

Nymphaea pygmaea rubra—This is the smallest of the small-flowered hardy Water Lilies, and eminently adapted for growing in tubs or even large pans of water The flowers have white sepals and pink centres. Shown by Mr AMOS PERRY.

Syringa sp.—The award to this graceful Lilac is subject to its being named. It has a lax truss of very small, tubular flowers of very pale pink colour, which are paler within, where there is a zone of colour. Shown by Dame ALICE GODMAN, D.B.E., South Lodge, Horsham.

Syringa Massena.—This immense single Lilac of great beauty was raised by Messrs. Lemoine. The truss is very shapely and the large flowers are of a medium shade of lilac colour. Shown by Major F. C. STERN, Highdown, Goring-on-Sea.

Chrysanthemum Mawii.—A graceful little species from the Atlas mountains. The foliage is rather sparse, and the whole plant is about eighteen inches in height. The stems are wiry, erect and lightly clothed with pinnate leaves. The single flowers have pale rosy-mauve ray florets. Shown by LADY LAWRENCE, Burford, Dorking.

Calceolaria Darwinii.—This is a very uncommon South American species. The whole plant is only a few inches high, and it bears relatively large solitary flowers of striking appearance. The plant makes a dense little tuft of ovate, toothed, Plantain-like leaves, and from this rise the short-stalked flowers The large pouches are widely open, with a rolled creamy lip. The back of the pouch is yellow, marked with small crimson spots, and there is a definite splashing of rich crimson-maroon at the base of the fact. Shown by Sir William Lawrence, Bt., Burford, Dorking.

Primula heucherifolia.—A pretty little plant. It has cordate, bullate, hairy leaves, and from these rise stems from six inches to nine inches in height, bearing heads of semi-pendulous widely open deep rose flowers, which have a darker zone. Shown by Dr. MacWatt, Morelands, Duns.

Commemoration Cup Class.

The competition for the Commemoration Cup brought three admirable groups, and these, arranged almost in the centre of the large marquee, formed one of the most successful features of the show. An oblong ground space measuring three hundred square feet was allotted to each exhibitor, and the conditions specified an exhibit of flowering and foliage plants commonly grown in stoves and greenhouses. The competition was open to both amateur and trade growers.

The first prize—the Silver-gilt Commemoration Cup and £30—was awarded to Messrs. L. R. Russell, Ltd., for a magnificent group composed of particularly well-grown plants arranged with great skill. They grouped many perfectly-grown Codiaeums (Crotons) with Caladiums in variety, Dracaena Victoria and many bright-leaved hybrids, Acalypha hispida, Alocasia argentea, Anthurium Pfitzerii, and Anthurium crystallinum longifolium bearing huge leaves of great beauty. Rising high along the centre were two graceful Palms and a magnificent specimen of Dicksonia antactica. Along the margins of this superb group were many small plants of great foliage beauty, notably Bertolonia sericea cristata, Leea amabilis splendens, Sonerila Sir Trevor Lawrence and Ficus Parcelli.

The second prize was awarded to H. B. Brandt, Esq., Cavenor, Nutfield, for an imposing group of exceedingly well-grown plants which contained more greenhouse subjects than in the foregoing. The tall Palms—two Seaforthias and a Cocos plumosus—spread their leaves over the centre and rose from mounds of Lilium longiflorum, of Hippeastrums and of Clerodendron Balfourianum associated with Acalypha hispida. Other plants so well used were particularly good specimens of Codiaeum, Dracaenas, Pandanus Veitchii, Medinilla magnifica, Diplacus aurantiacus, Torenia Fournieri, Gesneras, Coleus and especially profusely-flowered pillars of the double red and double yellow Tropaeolum.

The third prize group, from A. P. Brandt, Esq., Bletchingley Castle, Bletchingley, was also of considerable merit and well worthy of the competition. In this also excellent Codiaeums were shown, and there were many plants of Lilium longiflorum Hydrangeas, Lilium tigrinum, Spiraeas, Gloxinias and Lily-of-the-Valley.

Stove and Greenhouse Plants.

Of the many large exhibits of greenhouse plants raised from seeds which Messrs. Sutton and Sons have presented to the show-attending public, none has been of greater merit than that at this year's Chelsea Show. The method of arrangement was very daring and in less skilful hands could easily have resulted in failure instead of the fascinating success which was attained. It is not an easy group to describe, nor can photographic illustrations give an adequate impression of its many charms. Although of imposing character, it was exceedingly graceful and provided many vistas of great beauty. In this group were many Salpiglossis illustrating the several types and superlative charm of the golden-veined flowers. The large-flowered Calceolarias have rarely been shown so well, and in addition to large pouches of yellow and dazzling crimson, there were many art shades of great fascination. Cinerarias, especially the basket of dark blue and another of Forget-me-not blue, were especially effective. Gloxinias, Achimenes of a new type, bearing flowers of many beautiful colours and easily raised from seeds, Clerodendron fallax, of superb appearance, and Schizanthus hybrids, especially the most elegant retusus varieties, which bear large flowers of immense charm, were all presented in glorious masses. The pendulous varieties of Begonias in baskets on moss-covered pedestals also gave a charming effect.

A magnificent group of double-flowered Begonias was contributed by Messrs. Blackmore and Langdon. Not only did the many plants illustrate a most desirable strain and first-rate cultivation, but they were arranged with exceptional skill. The varieties of orange shading were particularly attractive, and these included John Mercer, Sir J. Reid, Lord Lambourne and Sidney Robinson. Amongst the pinks were Lady Ann, with flowers of great size; Mrs. T. Crawford, with fascinating waved petals; Hilda Langdon, one of the largest of all and of great beauty, and Mrs. H. Moncrieff, which had distinct crimped petals. Mrs. J. L. Rushton, of rich yellow colour, is so crested that it might almost be termed an Anemone-flowered Begonia. The crimsons were represented by Royal George, Sir Hugh Wilson, Grand Monarch and J. W. Pyman. The white varieties included Albatross, Mona, Nurse Cavell and Mrs. J. Thornton. Rising well above these magnificent pot plants were some perfect examples of the graceful, pendulous varieties in baskets. These were Betha, soft salmon; Lettice, pale rose-pink; Stella, deep pink; Mollie, blush; and Mrs. Bilkey, rich orange.

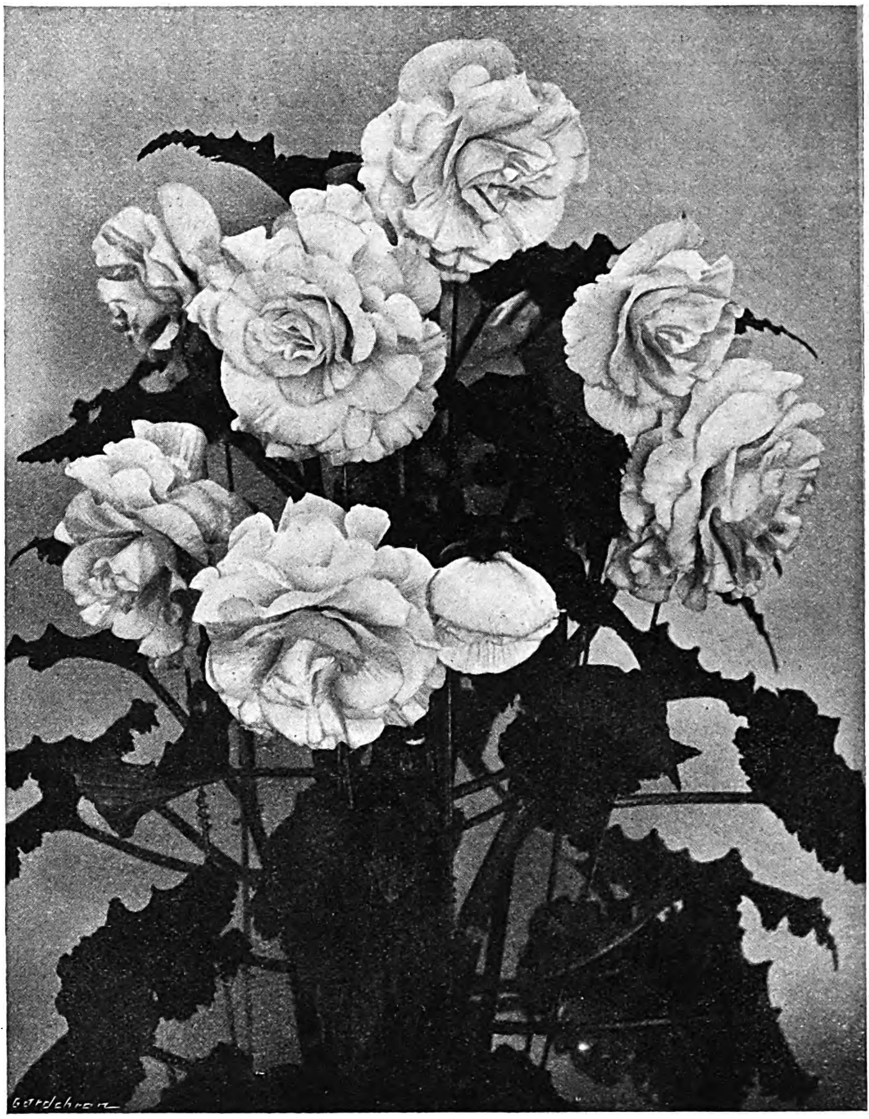


FIG. 176.—CHELSEA SHOW: BEGONIA FLORENCE BIGLAND.

R.H.S. Award of Merit, May 22. Flowers bright apricot. Shown by Messrs. Blackmore and Langdon.

In a large corner space at the Hospital end of the large marquee Messrs. E. Webb and Sons had a very effective group of Cineraria Stellata, Salpiglossis, Schizanthus hybrids, Clarkias, Stocks, Nemesias, Gloxinias, Primula obconica and other valuable greenhouse plants. The Stellata Cinerarias were especially effective; the plants were all well grown and bore large, shapely heads of bright flowers. In front of the large batch of the taller type there were specimens of the dwarf Cactus-flowered Cinerarias and these also were of considerable merit. The Stocks were Carmine Beauty and White Beauty, two particularly good varieties.

A particularly elegant and graceful exhibit was arranged by Messrs. J. Carter and Co. The large circular centre of variegated Maples rising above tall plants, with Clarkia Scarlet Queen merging into Calceolaria Clibranii and surrounded by large-flowered Calceolarias of considerable excellence was an especially successful piece of work. This artistic centre was encircled by Sweet Peas in great variety in raised vases above a groundwork of Schizanthuses, Nemesias, Lilium umbellatum and Ferns. At the corners were more Sweet Peas, the chief sorts being Magnet, Mr. A. Searles, Grenadier, Model, Princess Patricia, Camp Fire, Mammoth and Pinkie. The four outer groups were very charming confections. In one there was a central circle of Hippeastrums surrounded by Gloxinias. Another was composed of Petunia Queen of Roses by attendant Gloxinias, while a third circle was filled with Stellata Cinerarias surrounded by the large-flowered type. Specimen Crotons, Cocos plumosus and Arundinaria nitida provided the necessary relief and the whole of the exhibit was surrounded by grass of enviable greenness and freedom from weeds.

A memorable exhibit of Hippeastrums was sent by Baron Bruno Schroder (gr. Mr. E. J. Henderson), Dell Park, Englefield Green. These magnificent flowers were associated with equally splendidly grown Codiaeums (Crotons) in great variety, and there was just the right quantity of graceful Palms to make the ideal exhibition group. Many of the Hippeastrums were named varieties; others were seedlings of great merit, but all were excellent. The flowers were large, shapely, perfectly fresh and the colours were most enchanting in their loveliness.

Adjoining their exhibit of Carnations Messrs. Stuart Low & Co. displayed a pretty arrangement of Hippeastrums and Richardia Elliottiana, and miscellaneous hard-wooded plants such as Bougainvillea Mrs. Butt, Boronia heterophylla, Leptospermum Boscaweni, Metrosideros floribunda and Pimelea ferrugina, with a few Anthurium Scherzerianum varieties and Caladium argyrites.

An effective display of very good trusses of Zonal Pelargoniums was made by Mr. R. J. Case. His double sorts included President Baillet, orange scarlet; Dagota, large pink; The Speaker, orange; and Mona E. David, rosy purple. Amongst the single sorts were good trusses of Somerset Lad, salmon; Maxim Kolvalesky, orange; E. W. Penny, scarlet, and Mavis, soft pink.

A neat display of Zonal Pelargoniums was set up by Mr. W. A. R. Clifton, who displayed such double sorts as Dagota, Capp's Hazel, scarlet; Achievement, rose; Lave, orange, and Pasteur, soft pink. The chief single sorts were Edward Hockey, orange; Lady Folkestone, pink; Lady Warwick, picotee-edged and Venus, white.

The Castle Nurseries, Ltd., had a collection of greenhouse Fuchsias in small pots. They included Royal Purple, Emile Zola, Achievement, Elsa, Mrs. Marshall, Scarcity and Duchess of Albany among garden varieties and also showed Fuchsia fulgens.

On the tabling a small collection of good Gloxinias was shown by Mr. W. E. Skilton.

An admirable exhibit of Zonal Pelargoniums and Violas was set up by Messrs. Jarman and Co. The former included double August Richards, Dr. A Vialettes, M. Anatole Roseleur, and Flame Poitevine; while the single sorts were Sir J. Hanbury, Edward Hockey, Uranus, Caronia, Sir E. Cassel, Barbara Hope and Civic.

Carnations.

One always associates wonderful displays of Carnations with Chelsea, and this year the exhibitors surpassed themselves in the arrangement of their groups, and the fine condition of the blooms spoke well for the skill of the growers. Messrs. Allwood Bros. arranged two wonderful groups, one of perpetual-flowering sorts, the other of various types suitable for growing out-of-doors. The perpetual-flowering were in the form of a triangular pyramid, over the towering centre of which was a fine example of Phoenix Roebelinii, surrounded by large, hanging baskets of the lovely, deep crimson Topsy. There were pyramids of such fine sorts as George Allwood and Wivelsfield White, while prominent features were made of Laddie, Red Laddie, White Pearl and Edward Allwood. The base of the pyramid was composed of numerous choice varieties, such as the yellow Maine Sunshine, Canadian Pink, Downs Beauty and Radiolite, a vivid scarlet, but the cream of the collection were Maud Allwood, pink, Wivelsfield Claret Improved, and Velvet, crimson, flaked-maroon. The hardy sorts were arranged in grass edged tiers, with well-filled garden vases at the corners, and a large ornamental vase of Sussex Crimson at the summit. Among the novelties included were several of the Allwoodii alpinus class, which are suitable for planting on the alpine garden or on walls, such as Puck, white, with a purple eye; and Titania, crimson, with a deeper eye. Among the perpetual border sorts the most striking were Sussex Scarlet, Sussex Pink and Sussex Leander, while of the Allwoodii sorts, mention may be made of Hugh, purple; Freda, mauve pink; and Esther, similar to the old-fashioned laced type.

The gigantic mass of blooms arranged by Messrs. C. Engelmann, Ltd., filled a corner of one of the tents, in the form of a bank, with pillars of choice varieties, such as the deep crimson Dorcas, Circe Improved, the beautiful pink Mrs. Walter Hemus, and White Enchantress, rising here and there; and pedestals bearing vases of Janet, Laddie, White Pearl, Hebe, Maine Sunshine, Nero and Zorro. There were good blooms of Palette, Topsy, Master Michael Stoop, Wivelsfield White and Peerless, while other good sorts were Coral Glow, Citron, the beautiful pink Marchioness of Salisbury, Jazz and Orange Sunstar. The background of this bank of flowers consisted of masses of Coral Glow, the scarlet Ariadne, Saffron, a beautiful lemon-yellow, and the pale pink Delice.

Messrs. Lowe and Gibson, Ltd., arranged their exhibit of hardy border Carnations in the form of a broad bed, with Palms and a few Delphiniums in the background; while there was a central group of fine specimen plants of Lilium regale. The Carnation plants were bedded in peat-moss, and the bed was margined with turf and Ferns. There were also tastefully arranged vases of mixed blooms of wonderful shades. Among the novelties included in this group were Idwen, with well-shaped orange, shaded mauve blooms; and Florence Grisley, with scarlet and cream flowers. The primrose-coloured Mary Murray; quaint Bookham Belle; Steerforth, a crimson and white Clove Carnation; Ida Gray, Cleopatra, lovely salmon-pink; Lieut. Shackleton, and Mrs. Edward Charrington, were a few of the choicest. Other good sorts were the lovely Snowflake, the deep velvety-crimson Joan Wardale; Viceroy and Bookham Scarlet; also the beautiful Border Yellow.

A small but choice collection of new Pinks was shown by Mr. C. H. Herbert, several of which were extremely fragrant. Chocolate, the rich red Conquest; deep crimson Othello, and the smaller-flowered Victory of similar colour, together with Cerise Queen, The Bride, Novelty, and Princess Elizabeth were outstanding varieties; other notable sorts were Harmony, pink with purple centre; Mrs. G. Walkers, Red Indian, Bridesmaid, a very dainty flower; Queen Mary and Model.

Another collection of hardy border Carnations was staged by Mr. J. Douglas, and the blooms were of exceptional quality, well coloured and of perfect shape. Asphodel, with vivid orange-pink blooms; Princess Mary of large size and bright terra-cotta colour; Swarthy Clove, deep velvety-crimson; Glamour, a wonderful primrose-yellow variety; and Sam Weller, cream, edged and striped red were very prominent, but equally as striking were Fair Ellen, Bookham Scarlet, Unique Kelso, salmon-pink shaded purple; Nautilus, and Brunette. The large pale, yellow Valentine; pink and white May Morning, Edenside, Cleopatra, Paladin and Wonder Clove were among the best where all were very choise.

Messrs. A. F. Dutton, Ltd., arranged a small group of the well known Carnation Mrs. A. J. Cobb, which did full justice to the popularity that this variety enjoys; there were also good vases of the beautiful pink Lady Northcliffe.

The chief features of Messrs. Stuart Low and Co.'s group of Carnations were the fine vases of Philip Sassoon, Arnos Grove, Happidais, and Queen Mary. There were excellent clusters of Sheila Greer, Eileen Low, and Mrs. Ward Improved, while Lady Hindlip, Mrs. Hamilton Fellows, Astarte, White Pearl and Dorothea, looked exceptionally fine, together with Mrs. Myles Kenedy, and Hugh Low, lovely Malmaison sorts.

Ferns.

Mr. Amos Perry was the only exhibitor of Ferns, and his circular mound consisted of hardy sorts. There were several Osmundas other than the well-known O. regalis, such as O. purpurascens, O. gracilis, O. regalis cristata and O. japonica. Lastreas were also well shown, the chief sorts being L. propinqua crispa, L. Pinderii, L. japonica, L. f. m. Mapplebech, L. ramosa and L. p. m. Cousensii. Polystichums in great variety were shown, P. angulare lacineare Will's, P. densum robustum, and P. a. lineare, and P. a. tripinnatum being of the choicest, while of Athyriums there were A. f. f. gemmatum, A. f. f. plumosum elegans, A. f. f. polydactylum and A. f. f. cristatum purpureum, among a host of others. The plants of Scolopendrium vulgare nobile and Struthiopteris germanica were also very attractive and interesting.

Irises.

The Irises exhibited by Messrs. G. Bunyard and Co., Ltd., consisted of two large triangular beds of well-grown specimens, all of which were in excellent condition but sparsely flowered. They were of the Bearded type, and among the most striking were the rich purple Sapphire; the delicately shaded Quaker Lady; pallida dalmatica, an old but still popular variety; Titan, Amber, a rich golden-yellow; and Corrida, a lavender, self-coloured Iris. There were also magnificent blooms of the richly-coloured Ambassadeur; the lovely, deep rose-purple Morning Splendour; a fine group of the tall-growing Prospero; and the dwarfer Dalila, with pink-shaded standards and mahogany-red falls. Marsh Marigold, another striking sort, Mrs. H. F. Bowles, the well-known Princess Victoria Louise, and Dusky Maid were also included in this tastefully arranged exhibit; while mention may also be made of a new seedling, unnamed, a hybrid between I. germanica and I. regelio-cyclus, with purple standards and deep, velvety-purple falls.

The triangular bed of Bearded Irises arranged by Messrs. Barr and Sons had various Funkias as a groundwork, and here and there, rising well above them, standard Japanese Maples. Among the most noticeable varieties were Lorelie, the bright purple Gertrude, Gracchus, Mount Penn, the white albicans, golden Mrs. Neubronner, and Fro, with golden-yellow standards and coppery-red falls. Quaker Lady, Wyndham, Magnifica and Crusader were also well displayed, and the group was margined with dwarf Lavender bushes and alpine subjects.

A small but attractively arranged display in the form of a semi-circle of beds divided by grass paths, with a background of Cupressuses, was laid out by the Orpington Nurseries Company, Ltd., and the plants which filled the beds were well-furnished with flowers. Aphrodite, the large-flowered Majestic; delicate, lavender-coloured Cluny; Evadne, and, most striking of all, the beautiful Grace Sturtevant, were a few of the most striking sorts, and mention should be made of the rich purple Tenebrae, and the somewhat similar Centurion; also the delicately shaded Menetrier. Shekinah, a primrose-yellow variety; Amber, of rather a deeper shade; and Yellow Hammer were noteworthy; while Sunbeam and Moonbeam, two improved forms of Yellow Hammer, the former with richer, and the latter with paler coloured blooms, were two promising novelties contained in this collection.

Mrs. W. R. Dykes arranged her choice Irises in two beds, divided and edged with turf. Olwen, pale lavender with deeper coloured falls; the white and cream Istria; rich purple Sapphire, and Aphrodite, were, perhaps, the cream of the collection, other fine sorts being Lustre, Moonlight and Cretan.

Sweet Peas.

In the second marquee, Messrs. Robert Bolton and Son had an imposing collection of Sweet Peas arranged with consummate skill. Their novelty for 1929, Bluebell, of fascinating blue-mauve shading, was given the central place. Magnet, of especially rich colouring, was shown in several large vases. Gold Crest is a particularly graceful, rich orange variety. The incomparable Mrs. A. Searles was also prominently placed. Other varieties of excellence included Picture, cream-pink; Montrose, a 1929 novelty of glowing pink colour; Susan, of the palest salmon colouring; Royal Pink, R. F. Felton, still a valuable lavender variety; Jessie, cream-pink, and Cameo, a new variety delicately flushed with pink on a pale cream ground.

On steps covered with black velvet and with a background of graceful Palms, Messrs. Dobbie and Co. set up a dazzling array of Sweet Peas. Considerable space was devoted to their new variety, Flamingo, a fine, large, graceful flower of glowing salmon-scarlet colour, lightly flushed with rose. The cream-ground Picotee-edged Sunkist was also well represented. Other beautiful varieties were Grenadier, of vivid scarlet colour, Royal Sovereign, rich orange;

Magnet, shades of soft pink; Improved Daffodil, Chieftain, mauve, and the valuable Pinkie.

In the centre of a neat arrangement, Mr. J. Stevenson included vases of three of his sterling novelties. These were Charm, a glowing rosy-crimson; Nina, of delightful pink shades; and an unnamed pink seedling. Treasure, a rich mauve Sweet Pea; Lilac Time, of uncommon colouring, and Honour, a deep crimson, were other novelties of merit. The standard varieties included Mermaid, Purple Monarch, Wild Rose, Powerscourt, Magnet, Jack Hobbs, Gleneagles and Wizard.

A novel and effective display of Sweet Peas was made by Messrs. Alex. Dickson and Sons, who employed arches, pedestals and baskets to show their good flowers. Their chief varieties were Flambeau, glowing crimson; Peggy, deep pink; Elegance, rich pink shade; Charming, vivid pink; Valentine, blush pink; Crusader, a fine pink; Hawlmark Maroon, of rich red shading; and Purple Perfection.

Rock Gardens.

The rock garden exhibits occupied the accustomed place at the Embankment end of the grounds. From many points of view it is an admirable site for outdoor exhibits of rock gardens and it is undoubtedly quite large enough for the purpose. For many days past the makers of these rock gardens had laboured under the most uncomfortable conditions, but, undaunted, they continued to such good purpose that the gardens were finished to the laying of the last turves well before the time appointed for judging them.

There were numerous exhibits of rock gardens, and, while there was no monotony of design or method of planting, each garden merged into its neighbour; so that there was a pleasant general effect. The consensus of opinion amongst the critical seemed to be that certain of the rock garden makers had excelled themselves and provided better gardens than ever before, and we imagine the great majority of people who visit the Chelsea Show regularly will agree with this opinion for in them all there was much to admire, and but little to criticise seriously. As with all phases of garden-making, the exact design is largely a matter of individual taste, and no two persons are likely to set about the task in precisely the same manner. This is as it should be, and in consequence the visitor found at Chelsea this week a most agreeable array of rock gardens of a variety of types, and we suspect that, like ourselves, the average visitor could not find it in him to say that he definitely preferred one to all the others.

Towards the middle of the rock garden area, Mr. G. G. Whitelegg made a very imposing garden much in the manner of bold outcropping of Cheddar stone, with a gorge leading to a well-balanced pond. An air of permanence was given to the large boulders by the Sempervivums which were growing freely in the deep fissures and the rugged Junipers which grew between them and, now and then, flung a branch over the crest. One rather felt that the idea of the designer was that the rocks were the thing, and that the chief effect was the correct placing of the immense boulders, and in this definite success was attained. But it was by no means an arrangement solely of massive stones. In the right places there were plenty of alpines, which provided colour and greenery sufficient to lighten it and to break any hard lines which might otherwise have been apparent. The principal plants so well employed were Phlox Vivid, Phlox G. F. Wilson, Aquilegia glandulosa, Daphne Cneorum, Gentiana verna, Saxifraga Aizoon, Saxifraga longifolia, Lithospermum Heavenly Blue, and the Royal Fern and the Hart's Tongue Fern.

In the neighbouring rock garden of Captain Symons-Jeune, the massive boulders and their correct placing were undoubtedly the principal feature, and the plants occupied quite a secondary place. If at the first glance this exhibit appeared harsh and massive, the impression quickly gave place to admiration, for the enormous boulders had been set with admirable knowledge and skill. In the foreground one immense, overhanging boulder was exceedingly successful. Below the frowning rocks a series of pools ran down from the grassy uplands to the lower levels, which were clothed with closely-cropped grass and a restrained quantity of alpines. The chief plants were Genistas, dwarf Phloxes, Trollius, Saxifrages, Primulas and Lithospermum Heavenly Blue.

The rock garden contributed by Mr. Gavin Jones was in many respects an elaboration of the boldly-conceived exhibits he had previously made in the Horticultural Hall, Vincent Square. Briefly, it may be described as being a steeply-rising bluff with a small stream flowing to a pool in the foreground. At the foot of the main rock work there was a very pleasant little terrace-like planting and this, with the rugged old Pines and other Conifers made an effective picture.

On the present occasion, Messrs. Pulham and Son used natural stone, and made a very successful representation of a Westmorland hillside outcropping. Between the steep, rugged boulders, rocky streams splashed and fell to the placid pool below, and in addition to the charm of rocks and running water there were abundant flowers to brighten the scene. Of the many plants in this garden, the following were the most prominent: Cheiranthus Allionii, Oenothera Warley, Daphne Cneorum, various Brooms, Primula Bartley Strain and others, Genista procumbens and Pentstemon Six Hills variety.

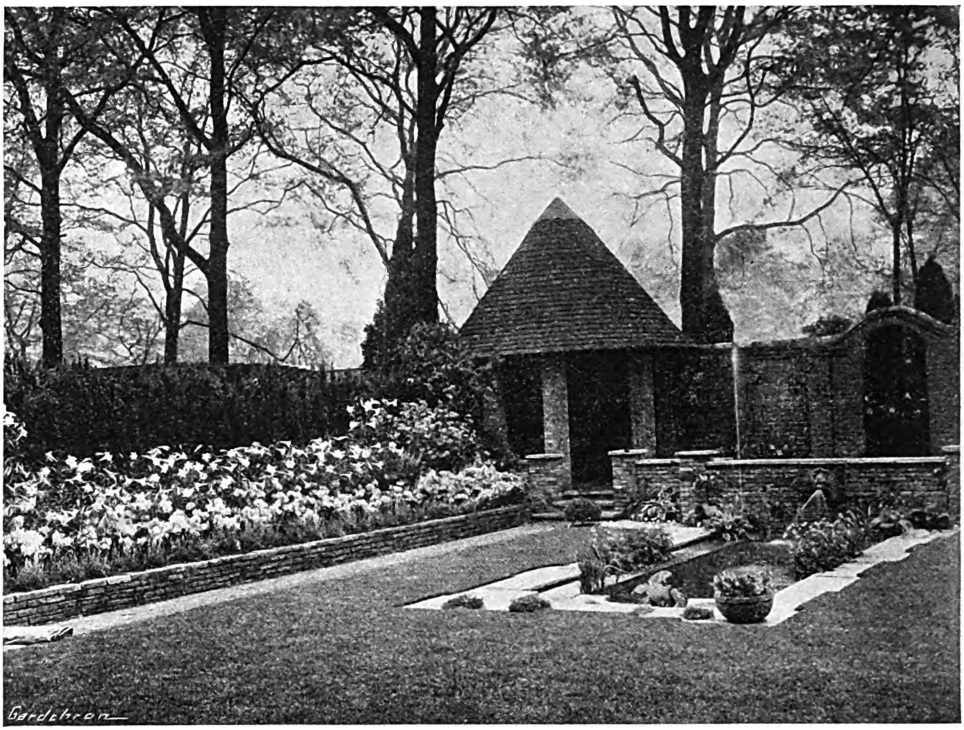


FIG. 177.—CHELSEA SHOW: MESSRS. GAZE AND SONS' LILY GARDEN.

A bold and effective rock garden of weathered stone was made by Messrs. William Cutbush and Son, and this included a very effective rocky cascade which fed a central pool. Full advantage was taken of the permanent trees and shrubs and the fresh planting was blended admirably with the old. In appropriate places there were generous breadths of Azalea rosaeflora, Daphne Cneorum, Brooms in variety, shapely little Conifers and other suitable shrubs. The alpines included Saxifrages, Primulas, Armerias and many more, while around the pool there were graceful grasses and reeds and several Funkias.

The first rock garden from the main avenue was made by Mr. R. Sims, and this was of agreeable, well-balanced design, but—and in this case the "but" was very obtrusive—the plants were set in woodland moss. Such a method may, perhaps, be permissible with a small exhibit on tabling in a show hall, but, surely, it should not be practised out-of-doors at Chelsea. The planting was done with restraint, and the principal subjects were Pines, Cupressuses, Brooms, Japanese Maples, Saxifrages, Aubrietias, Forget-me-nots, double-flowered Daisies and Violas.

A distinct and most pleasing rock garden was made and planted by Mr. Clarence Elliott. The design was effective but not unduly pretentious and it seemed that the designer had most in mind the provision of suitable places for a good collection of alpines, where they might grow and show themselves in congenial surroundings. In the foreground there was an admirable moraine where were growing charming and dainty little plants of Primula farinosa, Oxalis enneaphylla, Erinus alpinus var. Dr. Haenaele, Wahlenbergia serpyllifolia major, Erodium hybridum roseum and many more suitable plants. In the main rock garden were bold breadths of Aquilegia glandulosa, Meconopsis Baileyii, Ranunculus Lyallii, Primula secundiflora, Saxifraga primuloides, Elliott's var. and Veronica gentianoides variegata. The placing of these and other plants was exceedingly well done.

A smaller rock garden was made by Mr. Marcel de Smet and this had a small waterfall with a series of pools. The planting, which was rather sparse, consisted of Geraniums, Thrift, Primulas and Aquilegias.

In their rock garden Messrs. Hodsons placed between and across the large boulders of weathered stone, drifts of Brooms, Mimulus, Veronicas, Gentiana acaulis and prostrate Junipers.

Rock Gardens on Tables.

Anywhere else but at Chelsea the rock gardens made on tables under canvas would have been sufficient for a show in themselves, and, despite the fact that there were so many other things to see, this feature claimed the attention of a big proportion of the visitors, perhaps because of the fact that so many people in these days who have only small gardens aspire to the possession of a rock garden. The table displays of alpine plants, some common and others rare, mostly arranged with taste, but in some cases overcrowded, were decidedly educational, inasmuch as they depicted the possibilities of a rock garden where space is distinctly limited. It was an advantage, too, that these gardens were arranged in close proximity to each other, which was conducive to centralisation of attention, and afforded an opportunity of making comparisons.

There was something dainty about the small display made by Messrs. W. Wood and Son, Ltd., Taplow, in which the plants were arranged in compact clumps divided by blocks of natural stone. Colours, too, were nicely blended, and amongst other things to take attention were Aquilegia Helenae, and Iris cristata, a charming little thing with blue flowers; a diminutive bed of Erinus Dr. Haenaele occupied one corner, and Dianthus alpinus another. It would have been difficult to have arranged more subjects without giving an overcrowded appearance.

There was, perhaps, rather too much soil showing in the display made by Messrs. Skelton and Kirby, and while some of the dwarf Conifers shown were interesting, they gave one the impression of being hardly in their proper places. Flowering plants were represented by Phlox divaricata var. Laphami, Primula sikkimensis, Primula Red Hugh, Dianthus Enid and others.

Looked at from a distance of a few yards, the rock garden arranged by Mr. Gavin Jones, of Letchworth, looked natural and attractive, for the stones, not too many of them, were much as one would expect to find them under natural conditions. Although the dainty little plants peeping out of crevices and creeping over rocks were mostly of a familiar character, they were none the less attractive. There were choice little Primulas and Gentians, clumps of Violas and Aquilegias, and a dash of distinct orange colour was added by a bunched group of Tulipa Sprengeri. Described as a whole, this was a very effective exhibit.

In the display made by Messrs. Clarence Elliott, Ltd., Stevenage, Herts., one saw at once the work of an artist in the making of a natural rock garden on a limited table space. In fact, this exhibit differed from anything else in the show; there was an air of the Alps about it, and the little Sempervivums, in many varieties, which crept over the grey stones, looked as if they had been there for years. Limestone chippings and moss were used for groundwork purposes, and the fact that there was no overcrowding seemed to add to the attractiveness of the many delightful little alpine plants that were employed in making the garden.

There was something bold and almost rugged about the display made by Mr. F. G. Wood, of Ashtead, in which Japanese Maples and Conifers were intermingled with flowers. The stone that was used quite effectively gave the exhibit a truly rocky appearance, while a small pool of water was secretly hidden in the centre. Amongst the flowering subjects were groups of dwarf Azaleas, Aquilegias, Phloxes, Primulas and Saxifrages in variety, and the ordinary run of alpines was varied by the presence of a few ferns and Cotoneasters.

Messrs. Bowell and Skarratt's exhibit from Cheltenham was more a display of alpine plants than a rock garden, and an attempt, not altogether unsuccessful, was made to crowd a lot of things into a very limited space. A certain amount of stone was used, but a lot of interesting little plants, shown in pots that could be seen, gave the group a somewhat artificial appearance. There were many charming and interesting subjects shown, including Arisarum triphyllum, Chrysogonum virginianum, Meum athamanticum and Ajuga genevensis.

Messrs. G. and A. Clark, Ltd., Dover, filled the end of one table with a small collection of flowering rock plants arranged in the form of a mound and intermixed with grey stone. The collection was quite interesting, and included in it was a variety of charming little alpine plants.

Mr. W. Sydenham set up a small rock garden arrangement containing various interesting plants, but the arrangement erred on the side of being two sparse.

From the Wansford Nurseries there came an interesting little collection of rock plants, and close at hand, Mr. J. Robinson displayed a collection which was arranged quite tastefully. Apart from its rather flat appearance, the rock garden set up by Messrs. R. Neal and Sons, Ltd., was quite pleasing, and dotted about amongst the moss-covered stones were many very interesting members of the alpine family. Not the least attractive display of alpine subjects was that arranged by Messrs. H. Langridge and Co., Westerham. In setting out the little plants, there was no undue crowding, and many familiar inhabitants of the alpine garden were represented.

Messrs. D. Stewart and Son, Ferndown, Dorset, made a bank of Azaleas, in which the variety Brilliant was very conspicuous, and along the front with an edging of stone were interesting little plants, such as Allium Ostrowskianum, Muscari plumosum, and Hyacinthus amethystinus.

Messrs. Wilson and Agar, Reading, used dwarf Conifers as a background for their small rock garden, which contained Violas Grandeur, Haslemere, Clarence Elliott and others, as well as dwarf Irises, Sedums and Aubrietias in variety.

There was considerable taste displayed in the arrangement of the rock garden exhibited by the Birch Farm Hardy Plant Nursery, Shapthorne. Saxifragas in variety looked very natural in the crevices between the stones, and a big display of Daphne Cneorum major at the left end of the garden was extremely effective.

The Primley Botanic Nursery, Paignton, Devon, set up a nice collection of plants, but the display would have been more effective if the paper labels bearing the names had not been quite so conspicuous. One interesting feature was a collection of the pretty little Felicia rotundifolia, a Composite, which hails from South Africa.

Considerable credit is due to Messrs. W. H. Rogers and Son, Southampton, for the unique and original manner in which their exhibit was arranged. There was a background of Conifers, boldness in the masses of Saxifraga Caterhamensis and Phlox divaricata var. Laphami, while growing out, so to speak, from a groundwork of stone chippings there were many fascinating plants, including Pentstemon Davidsonii, Phlox Douglasii quaint Sempervivums in variety, Iris cristata, Rosa pumila, and Aquilegia glandulosa. The charm about this display was that everything could be seen, and the whole scheme be taken in at a glance.

There was a bewildering variety of plants and flowers in the display made by Mr. G. Reuthe, Keston, but the arrangement could hardly be described as attractive, and dozens of ordinary deal labels giving the names of plants shown, marred the artistic effect considerably. The most pleasing features in this exhibit were bold groups of Primulas pulverulenta and Helodoxa, Trillium grandiflorum and Phlox divaricata.

Messrs. Tuckers, Ltd., Oxford, used greystone very effectively in the foundation work of their rock garden, and the flowering plants were tastefully arranged in dainty little groups which set them off to full advantage. Aethionema Warley Hybrid was extremely attractive in a tiny bed to itself, and a sloping bank of Saxifraga primuloides, Elliott's variety, was highly effective. Clumps of pink and crimson Azaleas at the back gave a touch of colour to an exhibit that was tasteful and artistic in design.

Although somewhat orthodox in the manner of arrangement, the display set up by Messrs. Maxwell and Beale, Broadstone, contained many interesting features, amongst which were groups of Dodecatheon Jeffreyi, Incarvillea grandiflora, Genista hispanica nana, Daphne Cneorum, Trollius europaeus superbus and Saxifraga Esther.

Although it could hardly be described as a rock garden, the exhibit from Messrs. Bakers, Wolverhampton, was extremely interesting, and varied in the character of the flowers displayed. It was indeed a collection of alpine and other plants, which included Azaleas, Cytisus purpureus pendula, Meconopsis Baileyi and Potentilla davurica, as well as dainty clumps of Saxifraga Crimson King and that interesting little yellow flower, Morisia hypogaea.

The Central Garden Supplies, Harrow, filled a table with a collection of alpine and other plants that was varied and interesting. In the exhibit was a clump of the perpetual Myosotis Orion and Viola gracilis major, a very free-blooming variety. Another uncommon plant represented was Euphorbia Cyparissias, and a group of the small Tulipa persica attracted attention.

There was something very tasteful about the manner in which Hemsleys Nurseries, Crawley, arranged their table of rock and other plants, using just enough stone to serve its purpose. Amongst the interesting plants displayed were Chrysogonum virginianum, Verbena Mahoneti, Grevillea alpina, Campanula nitida, Saxifraga primuloides Elliott's variety, and Thymus nitidus.

Mr. Scaplehorne, Beckenham, filled a length of tabling with a collection of flowering plants that were arranged in a very tasteful manner. Saxifraga calabrica stood out boldly in the centre of the collection, and many dainty rock plants were represented in large enough clumps to be effective.

As might have been expected, Messrs. Backhouse, of York, made a display that was unique and worthy of the name. There were pretty Azaleas and dwarf Conifers at the back and along the front; arranged in natural looking pockets, were Primula Pam, a delightful little plant, Violas in variety, Edraianthus serpyllifolius, Helianthemum lunulatum, Pentstemon cristatus, Genista prostrata and many other interesting and charming subjects.

Messrs. Jean and Trowbridge, West Moors, Bournemouth, brought a very interesting collection of plants, amongst which was Cotoneaster congesta, with small, white flowers and creeping habit. Alpines were represented in considerable variety, and the whole exhibit was one that merited attention.

Messrs. Gasburn and Welch, Cambridge, used bold blocks of stone with artistic effect in arranging a collection of rock plants that looked extremely natural. The dainty little rock plants were arranged in a manner which showed them up to great advantage, and particularly interesting were clumps of Erinus alpinus Dr. Haenaele, Polygala calcarea and Dianthus neglectus Roysii.

Messrs. J. Cheal and Sons, Crawley, filled a small space of tabling with a mixed collection of plants which included Olearia stellulata, Spanish Gorse, Dianthus Duchess of Fife, a pretty little pink variety; Veronica filifolia, and Gentiana verna.

Highly effective are adjectives which aptly describe the rock garden arrangement made by Mr. W. Wells, Junr., Merstham, Surrey. Stone was tastefully employed, and in the great variety of plants naturally displayed, Lithospermum Heavenly Blue, Primula hirsuta The General, Ramondia pyrenaica, and Erinus hirsutus were extremely attractive.

Mr. P. Gardner, Addingham, set up quite an effective little rock garden, in which most of the popular alpine plants were represented, and the scheme of arrangement was carried out with considerable taste.

The display made by Messrs. Waterers, of Bagshot, was one that rightly attracted considerable attention. The arrangement reflected great credit on the good taste of the exhibitors, and very charming were the little beds amongst the stone of Iris cristata, Erinus Dr. Haenaele Primulas in variety, Linum arboreum and Thymus nitidus.

A small display of rock plants was made at the end of one table by Messrs. Hudson, of Nottingham, in which many of the usual subjects were displayed with considerable effect.

Considerable taste was evident in the arrangement of the rock garden set up by Mr. R. V. Pickering, Yorkshire, stone being used with effect, and the many little alpine plants displayed in small groups between the stones looked very natural.

Messrs. Small and Co., Croydon, set up a small bank of rock work with an attempt at crazy paving on a small scale that was not unsuccessful. The material used in the way of plants was of the general rock garden character, and the display as a whole was effective.

A considerable group of Primulas in the centre was the main feature of the little rock garden set up by the Misses K. and E. Hopkins, Ashdown Park, Coulsdon, and the arrangement of the exhibit was simple but charming.

Messrs. M. Prichard & Son, Christchurch, made good use of the space allotted to them in arranging their collection of rock and alpine plants. It was a most interesting group, and there was no overcrowding of the many charming little plants on view, all of which were shown in full flower and very fresh condition. There was also just enough stone used to be effective.

Greystone was used with tasteful effect in the display made by Mr. G. G. Whitelegg, and an effective feature in the exhibit was a fine plant of Azalea rosaeflora, while Saxifragas in variety also added to the attractiveness of the scheme.

Hardy Herbaceous Flowers.

Although there was necessarily a similarity between the many exhibits in this section, hardy herbaceous flowers nevertheless contributed their quota to the great show, and were admired by the crowd of visitors as much for their beauty as for the fact that they are adapted to the limits and conditions of the majority of flower gardens.

Delphiniums figured conspicuously in the group of hardy flowers set up by Messrs. Bakers, Ltd., and the varieties which attracted most notice were Jean, Ruby and F. W. Smith. Amongst Lupins, Downer's Delight was very attractive, and Verbascum Cotswold Queen was much admired. Pink Spiraeas and yellow Trollius were also included in this very attractive collection.

One could hardly imagine anything more pleasing than the big group of Lupins staged by Mr. G. R. Downer, and the varieties were arranged in such a way that each one could be seen distinctly. Great is the variation in colour amongst these flowers, and striking varieties were shown under numbers. Amongst those named, Irene Hamilton, Ranji, Welcome, Downer's Delight and Irene Hamilton were conspicuous.

Messrs. Kelway and Son set up a charmingly attractive group in which Delphiniums in a variety of colours formed a background, with Gladioli, Pyrethrums, Paeonies and Lupins in the front; many exquisite varieties of each of the above were represented and much admired.

From Messrs. Hewitt came a very striking group of tall Delphiniums in various shades of purple and blue. Joybells, Happy Thought, Rose Marie and Cambria were amongst the most conspicuous varieties shown.

Lilium regale made a fine centrepiece in the mixed group shown by Mr. Amos Perry, but the interesting collection contained many other gems, amongst which were many varieties of Iris, Meconopsis betonicifolia, Tree Paeonies, Phlox canadensis and tall spikes of Eremurus.

The arrangement of the group from the Chalk Hill Nurseries, Reading, was rather flat, but amongst the flowers displayed were Lupinus Rosalind, Geum Fire Opal, Aquilegia long-spurred hybrids, Geum Orangeman, with Nepeta Mussini, and Centaurea montana grandiflora.

Messrs. Wilson and Agar set up a very attractive group of hardy flowers, in which Delphiniums in variety, Lupins, Pyrethrums, Aquilegias and Spiraeas were tastefully displayed.

Except that it was rather too crowded, the exhibit set up by Messrs. G. and H. Clark was attractive, and contained a large variety of herbaceous flowers. There were Paeonies, Eremurus, Pyrethrums and Spiraeas, with an interesting collection of varieties of Poppy.

Messrs. G. Gibson and Co. set up a compact little collection of hardy flowers in which were displayed Thalictrum aquilegifolium roseum, Berberis Thunbergii atropupurea, and Iberis Little Gem. The arrangement was quite tasteful, and around the edge of the group was a border of Saxifraga Lovely Rose.

Eremuri, Delphiniums, Lupins, Irises, Aquiegias, Geums, and Pyrethrums were all tastefully arranged in the group set up by Messrs. J. Waterer, Sons and Crisp, and the numerous varieties of the above flowers were much admired. This was a very attractive exhibit.

A mass of tall Delphiniums, graceful and elegant, and comprising all the shades of colour which this family of flowers possesses, describes the exhibit staged by Messrs. Blackmore and Langdon. It was indeed a great effort, every plant being of robust vigour, and the mass of tall flower spikes made a fine display. Millicent Blackmore was amongst the varieties which called for special admiration.

In a small exhibit from the Little Munden Nursery there were Lilies-of-the-Valley, Tulip Ellen Willmott and double red Paeonies, with Pansies in the front, but the flowers were rather too crowded to be really effective.

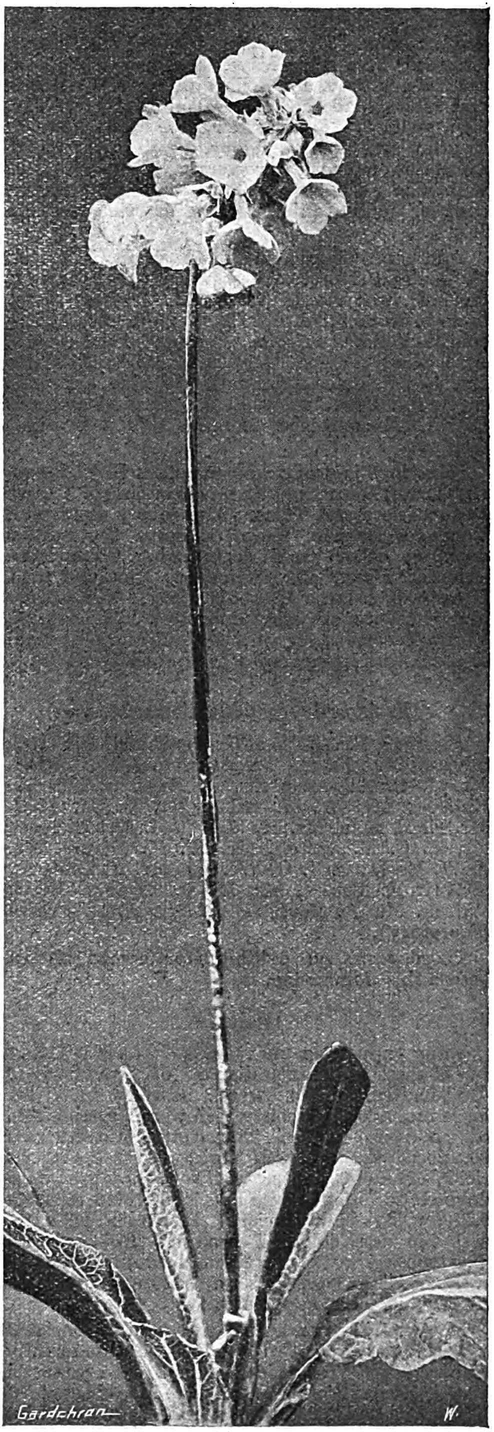


FIG. 178.—CHELSEA SHOW: PRIMULA NUTANS.
Exhibited by Lady Aberconway and Hon. H. D. McLaren.

Named varieties of Bellis predominated in the collection of flowers staged by Messrs. E. J. Redgrove and Son, and spikes of yellow Isatis glauca were also an attraction.

A delightful exhibit of Paeonies, of the Moutan type, was shown by Mr. W. West, Neve, Bray-on-Thames. Numerous delicate shades of colour were depicted in the flowers of which this unique little exhibit was composed.

Many golden and other shades of Lupins came from Messrs. Harkness and Sons, the varieties Golden Crest, Marjorie, Dresden China, and Exquisite being particularly attractive. The flowers were tastefully arranged, and the mass of spikes made quite an attractive feature.

In the exhibit from Messrs. Rich and Colling, dark blue Violas attracted attention; and very imposing were big masses of Cytisus Andreanus, Papaver Mrs. Perry, and Lupins in variety.

Primula were well shown by the Aldersley Hall Horticultural College, and amongst the chief sorts were Red Hugh, Bulleyana, pulverulenta and luteola.

A considerable amount of attention was centred in the charming collection of Meconopsis species exhibited by Mrs. Walter Jones, Aberuchill Castle, Perthshire. There were many attractive kinds in the exhibit and they fully demonstrated the beauty of this interesting family of plants.

One of the most charmingly interesting collections of both rare and well-known plants was that staged by Mr. W. H. Walters, of Colesbourne, and in it were plants that are unknown in many gardens. Although this exhibit was only small, it was highly interesting, and everything displayed seemed to have a characteristic of its own. To single out an example, namely, the purple-leaved Clematis erecta, Smilacina paniculata and Podophyllum Emodi parva were extremely interesting plants.

Messrs. M. Pritchard and Son set up an attractive group in which Primulas, Trollius, Eremurus, Pyrethrums, Lupins, Irises, Papavers, Geums, Genistas and Ericas were shown in charming variety.

A very bold display was made by Mr. J. C. Allgrove. In the centre were tall spikes of Eremurus Japanese Maples and Genistas, with Lupins, Paeonies, Anchusa Opal and Bearded Irises in the front. The arrangement of the group added considerably to its attractiveness.

Very attractive indeed were the tall spikes of Eremurus Elwesianus, shown in the centre of the collection staged by Messrs. Bees, Ltd., and it also contained fine specimens of Delphiniums, Lupins, Campanula Telham Beauty, Geum Borisii, Columbines in variety, and various dwarf flowering plants arranged in masses along the front.

Messrs. B. Ladham, Ltd., utilised the space allotted to them very effectively with a collection of interesting flowers, which included Edwardsia Kowi from New Zealand, Daisies in variety, Water-Lilies, Cytisus Delight and C. Moonlight, and an array of Violas that were very attractive.

Aquilegias, Cowslips and Auriculas made up a most effective exhibit staged by Messrs. Storrie and Storrie, and there was much to admire both individually and collectively in the collection.

A very fine collection of hardy flowers was set up by Messrs. Wilson and Agar. Delphiniums, Lupins in variety, Verbascum Cotswold Queen, and many varieties of Pyrethrum were included in this highly effective exhibit which attracted considerable attention.

Mr. R. J. Case sent a choice little collection of Lupins, which included the varieties Maidenhood, Bountiful, Goldfinch, Boy Blue, The Skipper, and others, and the whole made up an attractive group.

Delphiniums were the feature of the collection from Mr. J. Forbes, but the exhibit also contained a number of single Dahlias and Violas.

Narcissus and Tulip Committee.

Present: Mr. E. A. Bowles (in the chair), Mr. P. R. Barr, Mr. H. G. Hawker, Sir A. D. Hall, Mrs. V. Brodie, Mr. F. A. Secrett, Mr. W. Slinger, Mr. H. Smith, Mr. C. C. Titchmarsh and Mr. A. Simmonds (Secretary).

There was no plant shown before this Committee.

Groups.

Although the number of exhibitors of Tulips was comparatively small, the size of some of the exhibits and the general quality of the blooms, which in most instances were exceptionally good, made this popular flower a fairly prominent feature of the show. In all cases a high degree of efficiency in regard to the tasteful arrangement of the blooms was attained, despite the very trying conditions under which the staging of the flowers was carried out, for the heavily clouded sky made the tents at times so dark that the distinguishing of the various shades was no easy task.

Undoubtedly one of the finest exhibits in the show was the wonderful bank of Tulips arranged by Messrs. **Dobbie and Co.**, for the blooms were not only in extremely good condition, but they were well set-off by the black velvet background, together with Palms and Ferns. There were several yellow-flowered sorts, such as Hesta, a lovely pale primrose Cottage Tulip ; of which type also there were Avis Kennicot, Golden Crown, Mrs. Moon, Inglescombe Yellow and Canary Queen. Inglescombe Pink, Dom Pedro, Rosabella and Prince Albert were other notable Cottage varieties ; while of the Parrot type there were good examples of Fantasy and Rembrandt. There were innumerable Darwin varieties, and to select the most striking was a difficult task, but of those which made special appeal, mention might be made of Le Notre ; the large, rich rose-pink Sir Harry ; the popular scarlet-flowered Farncombe Sanders ; Erguste, The Giant, the well-known William Pitt, and Psyche. Altogether a really magnificent exhibit, which was finished off with a front margin of well-flowered plants of Viola Jersey Gem and Ferns.

The exhibit arranged by Mr. H. G. **Longford** was original in its design. It consisted of a paved path leading to an old, iron-studded door in a Yew clothed wall. On either side of the walk were mounds of Tulips and Dutch Irises. Of Tulips there were good patches of Clara Butt, Zany, French Crown, Prince of Orange, W. T. Ware, The Bishop and Lucifer, while the Irises displayed were Van Everdingen, lavender and cream ; White Excelsior, the deep blue, orange-blotched Imperator, and the golden-yellow Mouche d'Or.

The magnificent array of Tulips arranged by Messrs. **Barr and Sons**, consisting of two enormous mounds with a lower bed between, contained many fine sorts, the brilliance of which was accentuated by the Ferns and Japanese Acers employed in their arrangement, while the exhibit was finished with small mounds of Dutch Irises at each end. Most striking of all was the mass of Prince of Orange, which occupied the centre of the group, in the front of which were smaller clusters of Amber, the quaintly-marked Kingfisher, Inglescombe Yellow, Dulcima, Grenadier and Gesneriana lutea pallida. The giant mounds were composed of such striking sorts as the rich red Andromaque ; Bourton d'Or, Orange King, Zulu and The Bishop, a large purple variety, in one instance ; and La Tulipe Noir, Bronze Queen, Clara Butt, Mauve Claire, the flamed Kate Connor, and rich red Nectar, in the other. Other sorts which appealed forcefully were Dom Pedro, the popular Farncombe Sanders, Dr. Hardy, another flamed Tulip ; the yellow Cottage variety, Mrs. Moon, and Prince of the Netherlands. Among the Irises we noted D. Haring, Hart Nibric, and Geechus.

The bank of really choice blooms shown by Mr. A. **Dawkins** was arranged very artistically, the beauty of the blooms being seen to great advantage At the back Venus, Kathleen Parlow, and Mesday were three fine Darwin varieties, and of this group also there were good examples of Maya, Afterglow, the bronzy-yellow Vaughan, Orange Perfection and Prince of the Netherlands. Louis XIV was well shown, together with Sundew, a cherry-red Darwin with feathered margins, and the large, white-flowered Albino ; other good sorts were the lovely Hera, Arethusa, a fine pale yellow ; Helios, pale primrose : Miss Willmott, another yellow variety ; and King George, a very striking sort.

Another group of Tulips, well set off by clusters of double-white Narcissi and blue and white Scillas, was staged by Messrs. **R. H. Bath, Ltd.** ; Bleu Amabile and Rose Tendre were given prominent places, and several feathered and flamed varieties, such as Zomerschoon, Isabella, Butterfly, Pride of Inglescombe, Goldmire, Isabella and Salonica were also in evidence, while there were also good blooms of Paul Bowdry, Miss Willmott, Gesneriana lutea, The Sultan, Osiris, Maréchal Victor and Oranges and Lemons.

Tulips were also shown by Messrs. **Artindale and Son**, the most striking sorts displayed by them being Giant, Le Notre, Faust, Princess Elizabeth, Ouida, Zulu and Clara Butt ; Pygmalion. The International and Centenaire were also noted.

A mixed group of flowers, consisting chiefly of Tulips and several good varieties of Trollius, was staged by Mr. G. W. **Miller**. There were good blooms of Grenadier, Inglescombe Pink, Professor Westwick, Miss Willmott, Mrs. Moon, and Henry Clay, also Prince of the Netherlands and Inglescombe Yellow. Trollius His Majesty, rich gold ; T. Salamander, T. europaeus, T. Meotore and T. Le Candeur, a rich orange-gold, small-flowered sort, were very striking, and there were also well-flowered Polyanthuses, Gentiana acaulis, Double Daisies, Muscaris, Primroses and Irises.

Another magnificent mixed group, in which Tulips and Dutch Irises were the dominant features, was staged by Mr. H. **Prins**. Large baskets were filled with Tulips Sundew, Inglescombe Yellow, Tricolor, Oranges and Lemons, Alaska and Venus. Iris Imperator and White Excelsia, Scilla campanulata Sky Blue, Camassia esculenta, Pyrethrums, a few Narcissi and Iris Huttii, all combined to make this a brilliant display.

Next to this group was one staged by Messrs. **De Gaede Brothers, Ltd.**, consisting of Tulips, Dutch Irises and Ixias. The lovely deep pink Venus, a Darwin Tulip, occupied the central position, other good sorts being Chameleon, Princess Mary, La Citroniere, Diamond, and Phantasie, a large Parrot variety. There were huge baskets of Iris Imperator, I. Havringh, White Excelsior, the yellow Giant and Celestial ; and also a large group of Anemone De Caen.

Fruit and Vegetable Committee.

Present : Mr. J. Cheal (in the chair), Mr. H. S. Rivers, Mr. F. G. Treseder, Mr. F. Jordan, Mr. J. C. Allgrove, Mr. J. Basham, Mr. A. Bullock, Mr. W. F. Giles, Mr. R. H. Hall, Mr. E. Harriss, Mr. H. Markham, Mr. E. Neal, Mr. P. C. M. Veitch, Mr. W. H. Divers, Mr. J. W. Earl, Mr. J. G. Weston, Mr. F. Bostock, Mr. H. A. Prince, Mr. H. V. Taylor, Mr. J. Wilson, Mr. A. Poupart and Mr. A. N. Rawes (Secretary).

There were no exhibits for award shown before this Committee.

Fruits.

Many appetites must have been whetted by Messrs. **Laxton's** display of Strawberries. Well-fruited plants were staged in three large mounds, between which were large baskets of wonderful fruits. The centre mound was composed of Duchess of York, with well-shaped, richly-coloured fruits, while the others were devoted to King George and The Duke respectively. The new variety Laxton's Primate, and the dark-coloured Laxton's Robust were well shown, while the baskets were filled with fruits of King George, Laxton's Robust, Maréchal Foch, and Laxton's Majestic.

Messrs. **G. Bunyard and Co.**'s exhibit consisted of nearly fifty varieties of Apples all wonderfully coloured and for this season of the year in excellent condition. There were large baskets of Wagener, Lady Hindlip, Hormead's Pearmain, Encore, Alfriston and Smart's Prince Arthur ; Reinette du Canada and Allen's Everlasting looked especially appetising, as also did Tibbett's Pearmain, Chaplin's Pippin, Winter Queening, Lord Derby and May Queen, while other noticeable sorts were Newton Wonder, Cox's Orange Pippin, Rosemary Russet, Calville Rouge, Barnack Beauty, Claygate Pearmain and Heusgen's Golden Reinette.

Major the Hon. Sir J. H. **Ward**, K.C.V.O., showed a mixed collection of fruits grown under glass, consisting of Grapes, Figs, Melons, Peaches, Nectarines and Strawberries. Of Grapes there were several good bunches of Foster's Seedling and Black Hamburgh ; Melons included Hero of Lockinge, Royal Jubilee, Ringleader, King George and Countess ; while of Peaches there were good examples of Hale's Early, and of Nectarines, several fine dishes of Cardinal and Early Rivers, Brown Turkey Figs and Royal Sovereign Strawberries completed this excellent display arranged and grown by the veteran Mr. C. Beckett.

A collection of Citruses, Peaches and Nectarines, well laden with fruits and growing in pots, was arranged by Messrs. **T. Rivers and Son**. The Egg Orange, White Lemon, Citrus cornicuta, Maltese Oval and Thomson's Improved Navel Oranges, were well represented ; of Peaches there were Duchess of Cornwall, Duke of York and Peregrine ; and of Nectarines, Early Rivers, John Rivers and Cardinal. There were also well-fruited Cherry trees of such varieties as Guigne Annonay, and Belle de St. Trone, with and Curlew, EarlyRivers and Blue Rock Plums.

Vegetables.

The Hon. **Vicary Gibbs** (gr. Mr. E. Beckett), was the sole exhibitor in this section, but the exhibit which he staged may be described as marvellous, for there seemed to be no vegetable or salad that was not included, while all were in such perfect shape and condition as to suggest that the acme of cultural method had been reached. Peas were displayed in many varieties, Quite Content, V.C., Duke of Albany and Edwin Beckett being a few of the best ; and Tomatos were also well represented. A small, egg-shaped variety termed Wonder of Italy suggested a very suitable subject for the salad bowl, and there were also fine fruits of Peach Blow, Marsh Beauty, Peach, Golden Perfection and Golden Nugget ; of the several varieties of Potatos shown, Climax, Midlothian Early and Di Vernon were of exceptional merit. Cucumbers were also staged extensively, and there were perfectly shaped fruits of Jasper Queen, Delicacy, and Ideal, to mention but a few ; there were several varieties of French Beans, and the various types of Turnip were well represented. Mustard in large baskets, Cress, Celery and Asparagus were each shown in several varieties, while Aubergines and Capsicums were also included, together with a host of other subjects—a magnificent exhibit.

Primulas.

In view of the special interest attached to this group, on account of the Primula Conference held on the Thursday, a tent was set aside specially for exhibits of Primulas. There were quite a number of exhibits, some of them being very extensive and interesting, besides containing a considerable number of extremely rare varieties.

Messrs. **Oliver and Hunter** arranged a bed of Primulas, chiefly of the Candelabra and Sikkimensis sections ; but including also a number of other varieties. There were fine specimens of P. microdonta alpicola, the rather fragile P. flexilipes ; the white form of P. microdonta ; P. sikkimensis, and the giant P. Florindae. Of the Candelabras there was a fine bed of P. pulverulenta var. Mabula, with terra-cotta flowers ; P. Asthore seedlings, P. Bulleyana, and the smaller, vividly-coloured P. Cockburniana, P. burmanica, P. Red Hugh, and good specimens of P. helodoxa. The dainty P. involucrata was shown in large numbers, as also was the diminutive P. farinosa ; and there were good specimens of the lovely P. nutans, together with P. Forrestii, P. pseudo-capitata, and P. cernua ; the centre of the group was filled with wonderful examples of the giant form of P. Littoniana.

A small but choice collection of Primulas, chiefly of the moisture-loving types, was staged by Col. **Charles Brock** (gr. Mr. T. Cload), of Annan, Dumfriesshire. It contained numbers of specimen plants of P. pulverulenta and P. Florindae ; also P. Aileen Aroon and P. Red Hugh, while other sorts of note were P. Mooreana, the gaint form of P. Littoniana, P. helodoxa in particularly fine form, P. Bulleyana and several P. pulverulenta hybrids.

Giant border Polyanthuses were the dominant feature of Messrs. **Storrie and Storrie**'s display but they also showed a good strain of Primroses; large Hose-in-Hose Polyanthuses, of several striking shades, and several richly-coloured Cowslip hybrids.

The collection of Primulas arranged by Messrs. Wm. Wood and Son, Ltd., contained several rare novelties. P. Craven Gem, of the farinosa type, was a fascinating subject, with small heads of rich rose-purple flowers, and there were also good plants of the type, P. farinosa. P. vittata, the lavender-coloured P. chrysopa; a good plant of P. rosea—the only one exhibited; and P. siberica sinensis were well shown; while there were various P. pulverulenta hybrids, P. Bessiana, and P. Pam, a dwarf Juliae hybrid with masses of a rich velvety crimson flowers.

Mr. G. H. Dalrymple showed several of his famous Bartley strain of Primula pulverulenta, a special feature being made of P. Sir George Thursby, a hybrid between P. japonica and Lissadell Hybrid. It is a strong growing subject with rich red, darker-eyed blooms. There were also good specimens of Lady Thursby, rose-pink with yellow eye; Hew Dalrymple, soft pink with a contrasting deep crimson eye; Bartley Pink, and Brownie. He also staged good specimen flowering plants of P. vittata, P. Littoniana, P. burmanica and P. Cockburniana.

A magnificent group of moisture-loving Primulas was arranged by Col. and Mrs. Kemmis of Lymington, Hants. It included many excellent plants of P. Cockburniana, the purple P. burmanica; an unnamed hybrid of P. helodoxa × P. anisidora, of a promising apricot shade but lacking fullness in the flowers; and P. japonica Miller's Crimson. P. lichiangensis, with rose-magenta flowers and P. Mooreana were well shown, and there were also fine plants in full bloom of the golden P. helodoxa, wonderful P. nutans in robust health; and many excellent shades of P. pulverulenta Bartley Strain.

A collection of choice Alpine sorts in pans, many of which were unfortunately not in bloom, was staged by Mr. W. E. Th. Ingwerson, and there were also a few Bog Primulas. Of the former group mention might be made of P. farinosa sub-sp. dahurica, P. Veitchii, P. siberica chinensis, a vigorous form that was shown in large numbers; the small yellow-flowered P. Auricula var. ciliata and P. cyanantha Of bog Primulas there were several fine forms of P. pulverulenta and P. japonica.

At one end of the tent was a fine collection of P. obconica varieties, all heavily laden with blooms and tastefully blended in regard to colour. They were descriptively named according to their colours and some of the most striking sorts were Giant White, grandiflora Sutton's Blue, Salmon Queen and Bright Pink; these were from Messrs. Sutton and Sons.

A mixed group of Primulas was staged by Messrs. Maxwell and Beale, the most prominent sorts being P. Red Hugh, P. sikkimensis, P. Cockburniana, many excellent specimens of P. pulverulenta Bartley Strain, P. Lissadell Hybrid and P. japonica atro-sanguinea, a handsome sort. P. secundiflora, P. capitata, several fine plants of P. longiflora, P. Pam, P. secundiflora and a fine group of the dainty, diminutive P. farinosa alba, were also features of this group.

The Primbey Botanic Nursery showed the Primbey variety of P. obconica, a free-blooming sort with large, rose-pink flowers.

Dr. MacWatt of Duns, Scotland, who is well-known in the Primula world, showed many fine subjects. MacWatt's Blue Auricula, several well-flowered plants of P. Veitchii, gold-laced Polyanthuses, P. Cockburniana, P. Forbesii, the lovely P. chrysopa, and a large plant of P. heucherifolia, were all displayed well, and there were several good forms of P. pulverulenta. Other notable sorts were P. sino-Listeri, P. algida, P. Ellisae, fine Show Auriculas, P. Red Hugh, P. involucrata, P. capitata, P. siberica, P. microdonta, P. secundiflora and the exquisite P. chionantha.

A small group of Auriculas, choice unnamed seedlings, was shown by Mr. J. Douglas, while in the exhibit arranged by Mr. E. Scaplehorn were good examples of P. pulverulenta Bartley Pink, P. Red Hugh, the uncommon P. Menziesiana, P. sikkimensis, P. Aileen Aroon, and P. Veitchii.

The John Innes Horticultural Institute staged an interesting scientific exhibit, and from the R.H.S. Gardens, Wisley, came a colony of P. japonica, demonstrating the wide rage of colour of this species.

Most wonderful of all was the enormous group of Primulas, associated naturally with rocks and shrubs, with a ground-cover of moss, arranged by Lady Aberconway and the Hon. H. D. McLaren. There were masses of P. Cockburniana, P. involucrata, P. burmanica, several forms of P. japonica, and the magnificent P. Red Hugh Improved. Good specimens of P. sikkimensis, P. mollis, P. helodoxa and P. Veitchii, together with several forms of P. pulverulenta were displayed, and there were many uncommon sorts. Among these were P. effusa, P. Werringtoniensis, P. Forrestii, P. redolens, P. seclusa, P. apoclita, P. deflexa, P. Mooreana, and P. pudibunda. There were several plants of P. Reidii, also of P. Wilsonii, P. flexilipes, P. Littoniana and P. sino-Listeri, and good specimens of P. aurantiaca; but the gems of the group were the dozen or so magnificent plants of P. nutans.

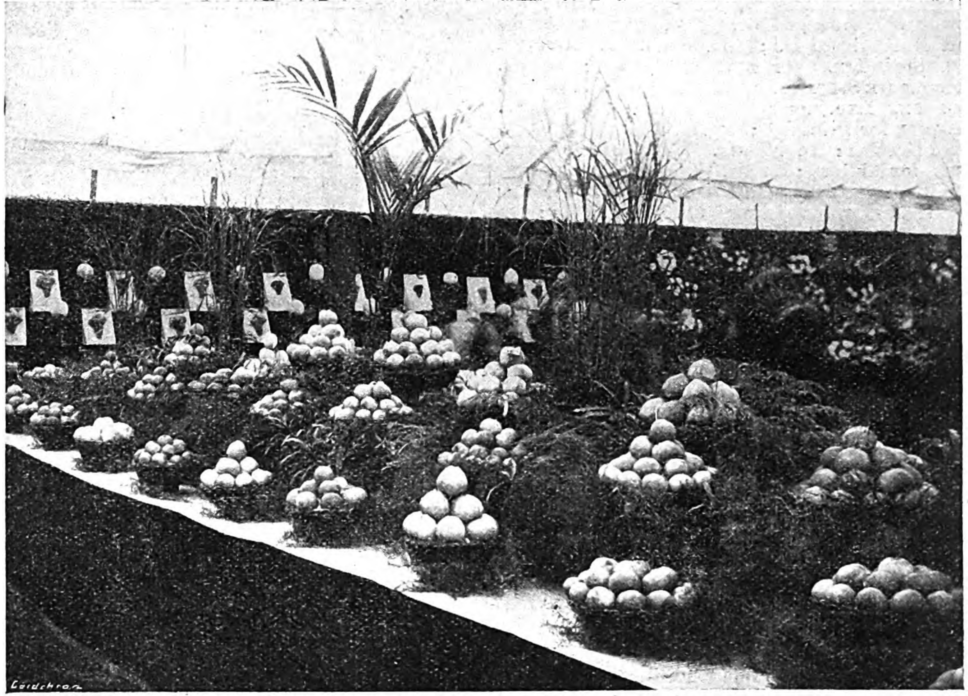


FIG. 179.—CHELSEA SHOW: MESSRS. G. BUNYARD AND CO.'S EXHIBIT OF APPLES.

Messrs. Bakers, Ltd., included in their exhibit large groups of P. japonica Etna; good examples of P. secundiflora, P. involucrata, P. Veitchii, P. Red Hugh and P. sikkimensis; while other noticeable sorts were P. Wardii, P. chrysopa, and P. Pam; there were also plants of enormous size of P. Florindae.

Awards by the Council.

Challenge Cups.

Sherwood Cup.—For the most meritorious exhibit in the show: To the Hon. Vicary Gibbs (gr. Mr. E. Beckett), for Vegetables.

Commemoration Cup and £30.—For stove and greenhouse plants staged on an area of three hundred square feet: To Messrs. L. R. Russell, Ltd.; 2nd Prize: Silver Cup and £20, to H. B. Brandt, Esq. (gr. Mr. H. Cook); 3rd prize: Silver Cup and £10: To A. P. Brandt, Esq. (gr. J. W. Barks).

The Cain Cup.—For the best exhibit shown by an amateur: To Lady Aberconway and the Hon. H. D. McLaren, for Primulas.

The Orchid Challenge Cup.—For the best group of Orchids shown by an amateur in a space not exceeding one hundred square feet. To F. J. Hanbury, Esq. (gr. Mr. Farnes).

Orchid Challenge Cup.—For the best group of Orchids shown by an amateur in a space not exceeding sixty square feet: To J. J. Joicey, Esq. (gr. Mr. J. Mackay).

Silver Cups:

To Messrs. J. Cheal and Sons, Ltd., for a Garden; to Messrs. W. H. Gaze and Sons, Ltd., for a Garden; to Messrs. R. Wallace and Co., Ltd., for a Garden; to Messrs. Barr and Sons, for Tulips and bulbous Irises; to Mr. Amos Perry, for hardy Ferns; to Messrs. T. Rivers and Son, Ltd., for Fruit Trees in Pots; to Mr. James Douglas, for Border Carnations; to Messrs. C. Engelmann, Ltd., for Carnations; to the Donard Nursery Co., for Shrubs; to Messrs. W. Fromow and Sons, for Japanese Maples; to Mr. H. J. Jones, for Hydrangeas; to Messrs. J. Carter and Co., for Gloxinias and other florists' flowers; to Messrs. H. G. Alexander, Ltd., for Orchids; to Messrs. Armstrong and Brown, for Orchids; to Messrs. Cowan and Co., for Orchids; to Sir Jeremiah Colman, Bt. (gr. Mr. J. Collier), for Orchids; to Messrs. B. R. Cant and Sons, Ltd., for Roses; to Messrs. C. Elliott, Ltd., for a Rock Garden; to Mr. A. Gavin Jones, for a Rock Garden; to Messrs. Pulham and Son, for a Rock Garden; to Messrs. Oliver and Hunter, for Primulas; to Messrs. M. Prichard and Son, for Rock Garden plants; and to Mr. F. G. Wood, for Rock Garden plants.

Medals.

Gold Medals.—To Messrs. R. Bolton and Son, for Sweet Peas; to Messrs. R. Wallace and Co., Ltd., for a mixed group of Lilies, Irises, Rhododendrons and Hardy plants; to the Hon. Vicary Gibbs (gr. Mr. E. Beckett), for Vegetables; to Messrs. Allwood Bros., for Carnations and Pinks; to Messrs. Chaplin Bros., Ltd., for Roses; to Messrs. Charlesworth and Co., Ltd., for Orchids; to Messrs. Blackmore and Langdon, for Begonias; to Baron B. Schröder (gr. Mr. E. J. Henderson), for Amaryllis; to Messrs. Sutton and Sons, for Greenhouse Plants from Seeds; to Messrs. Hillier and Sons, for Trees and Shrubs; to Capt. B. Symons-Jeune, for a Rock-Garden; to Mr. G. G. Whitelegg, for a Rock Garden; to

Lady Aberconway and Hon. H. D. McLaren, for Primulas.

Silver-Gilt Hogg Medal.—To Messrs. Laxton Bros., for Strawberries; to the Hon. Sir J. Ward (gr. Mr. C. Beckett), for Fruit.

Silver-Gilt Flora Medal.—To Messrs. R. and G. Cuthbert, Ltd., for Azaleas; to Messrs. J. Waterer, Sons and Crisp, Ltd., for Rhododendrons; to Mr. G. G. Whitelegg, for Azaleas; to Messrs. Dobbie and Co., for Tulips; to Messrs. Dobbie and Co., for Sweet Peas; to Mr. H. Hemsley, for a Garden; to the Ravenhead Sanitary Pipe and Brick Co., Ltd., for a Garden; to Messrs. Vernon Bros., for a Garden; to Messrs. Wm. Wood and Son, Ltd., for a Garden; to Messrs. G. Bunyard and Co., Ltd., for Irises; to Messrs. A. and W. Perry, for a mixed group of Herbaceous and Alpine plants, etc.; to the Yokohama Nursery Co., for a mixed group of Japanese Dwarf Trees, Kurume Azaleas and Miniature Gardens; to Messrs. W. Cutbush and Son, Ltd., for Clipped Trees and Hydrangeas; to Mr. C. H. Herbert, for Pinks; to Messrs. Frank Cant and Co., Ltd., for Roses; to Messrs. Bakers, Ltd., for Herbaceous plants; to Messrs. A. Charlton and Sons, for a mixed group of Trees and Shrubs; to Messrs. R. and G. Cuthbert, Ltd., for flowering Shrubs; to Mr. G. Reuthe, for Shrubs and Rhododendrons; to Messrs. W. Cutbush and Son, Ltd., for a Rock Garden; to Mr. Marcel de Smet, for a Rock Garden; to Messrs. Hodsons, Ltd., for a Rock Garden; to Col. W. Kemmis, for Primulas; to Dr. John MacWatt, for Primulas; to Messrs. Clarence Elliott, Ltd., for Alpines; to Mr. W. E. T. Ingwerson, for Rock Garden plants and Dwarf Conifers; to Mrs. Walter Jones, for Meconopsis; to Mr. W. Wells, junr., for Alpines.

Silver Flora Medal.—To Mr. F. Street, for Rhododendrons; to Mr. A. Dawkins, for Tulips; to Mr. Ernest Dixon, for a Garden; to Messrs. Hodsons, Ltd., for a Garden; to Messrs. John Scott and Co., for a Garden; to the Orpington Nurseries Co., Ltd., for Irises; to Messrs. A. F. Dutton, Ltd., for Carnations; to Messrs. Stuart Low and Co., for Carnations; to Messrs. Carter Page and Co., Ltd, for Dahlias; to Messrs Hewitt and Co., Ltd., for Delphiniums and Lupins; to Messrs. M. Prichard and Sons, for Herbaceous plants; to Messrs. Fletcher Bros, Ltd., for Trees, Shrubs and Conifers; to Mr. A. Gavin Jones, for Rock Garden plants; to Messrs. J. Waterer, Sons and Crisp, Ltd., for Rock Garden Plants and Dwarf Shrubs; to Messrs. W. H. Rogers and Sons, for Rock Garden Plants.

Silver-Gilt Banksian Medal.—To Mr. T. M. Endean, for Cacti and Succulents; to Mr. S. Smith, for Cacti and Succulents; to Messrs. M. Koster and Sons, for Rhododendrons; to Messrs. Alex. Dickson and Sons, Ltd., for Sweet Peas; to Messrs. Sanders, for Orchids; to F. J. Hanbury, Esq., for Orchids; to J. J. Joicey, Esq. (gr. Mr. J. Mackay), for Orchids; to Messrs. G. Bunyard and Co., Ltd., for Apples and Pears; to Mr. H. Prins, for a mixed group of Bulbous Plants and Paeonies; to Messrs. Bees, Ltd., for Herbaceous and Rock Garden plants; to Mr. James McDonald, for a Garden; to Messrs. Skelton and Kirby, for a Garden; to Messrs. J. Cheal and Sons, Ltd., for Shrubs; to Messrs. G. Jackman and Son, for Clematis; to Mr. John Klinkert, for Topiary; to Mr. R. C. Notcutt, for Brooms, Lilacs and other shrubs; to Messrs. L. R. Russell, Ltd., for Trees, Shrubs and Climbers; to Messrs. J. Waterer, Sons and Crisp, Ltd. for Shrubs; to Messrs. Blackmore and Langdon, for Delphiniums; to Mr. G. R. Downer, for Lupins; to Messrs. J. Waterer, Sons and Crisp, Ltd., for Herbaceous Plants; to Messrs. Wilson and Agar, for Herbaceous plants; to Messrs. E. Webb and Sons, Ltd., for Cinerarias, Schizanthuses, etc.; to Mr. Elisha J. Hicks, for Roses; to Mr. S. Sims, for a Rock Garden; to Col. C. Brook, for Primulas; to Mr. G. H. Dalrymple, for Primulas; to Messrs. W. E. T. Ingwerson, for Primulas; to Messrs. Bowell and Skarratt, for alpines; to Messrs. Clarence Elliott, Ltd., for Trough Gardens; to Messrs. Tuckers, Ltd., for Rock Garden plants.

Silver Banksian Medal.—To Messrs. R. Neal and Sons, Ltd., for Rhododendrons, Azaleas and Kalmias; to Mr. W. C. Slocock, for Rhododendrons; to Mr. J. Stevenson, for Sweet Peas; to Messrs. Daniels Bros., Ltd., for a mixed group of Schizanthuses and Aquilegias; to Messrs. De Goede Bros., for a mixed group of Dutch Irises, Tulips, Gladioli, etc.; to Mr. G. W. Miller, for a mixed group of Tulips and Herbaceous plants; to Messrs. Robert Green, Ltd., for Bay Trees; to the Hallamby's Nurseries, for Trees, Shrubs and Conifers; to Messrs. Neve · W. West, for Tree Paeonies; to Messrs. Wm. Watson and Sons, Ltd., for hardy Brooms; to Messrs. W. Easlea and Sons, for Roses; to Messrs. Bakers, Ltd., for Primulas; to Messrs. Backhouse Nurseries, Ltd., for Plants and Dwarf Shrubs for the Bock Garden; to Messrs. Bakers, Ltd., for Rock Garden Plants; to Messrs. H Langridge and Co., for Rock Garden Plants; and to Mr. G. Reuthe, for Rock Garden Plants.

Flora Medal.—To Messrs. Chaplin Bros., Ltd., for Violas; to Mr. H. Clarke, for Violas; to Mr. H. G. Longford, for a mixed group of Tulips and bulbous Irises; to Mr. Wm. Yandell, for Violas; to Mr. W. J. Marchant, for Trees and Shrubs; to Mr. R. O. Notcutt, for Shrubs; to Mr. Charles Turner, for Shrubs; to Mr. J. C. Allgrove, for a mixed group of Shrubs, Eremurus and Herbaceous Plants; to Messrs. R. H. Bath, Ltd., for a mixed group of Tulips. Daffodils and Herbaceous Plants; to Messrs. G. Jackman and Sons, for a mixed group of Herbaceous and Alpine Plants and Shrubs; to Messrs. Lowe and Gibson, for a mixed group of Border Carnations, Lilies, etc.; to Messrs. R. Gill and Son, for a mixed group of Rhododendrons, Shrubs and Herbaceous Plants; to Messrs. Casburn and Welch, for Alpines.

Banksian Medal.—To Mrs. W. R. Dykes, for Irises; to Messrs. Barr and Sons, for Irises; Messrs. Black and Flory, for Orchids; to Messrs Stuart Low and Co., for Orchids; to Messrs. B. Ladhams, Ltd., for hardy Plants and to Messrs. G. Gibson and Co., for Herbaceous Plants, etc.; Shrubs; to Messrs. Bowell and Skarratt, for Shrubs; to Messrs. Harrods, Ltd. for Clipped Box and Bay Trees; to Messrs. J. Cheal and Sons, for Dahlias; to Messrs. Reamsbottom and Co., for Anemones; to the Horsecombe Quarries and Stone Works, for a Garden; to Messrs. W. Cutbush and Son, Ltd., for Roses; to Messrs. John Peed and Son, for Stove and Greenhouse Plants; to Messrs. Wm. Wood and Son, Ltd., for Primulas; to the Central Garden Supplies, for Plants, Dwarf Shrubs and Dwarf Conifers for the Rock Garden; to Mr. P. Gardner, for Alpines; to Mr. H. Hemsley, for Rock Garden Plants; to Messrs. Jeans and Trowbridge, for Plants and Shrubs for the Rock Garden; to Messrs. Maxwell and Beale, for Rock Garden Plants; to Mr. R. V. Roger, for Rock Garden Plants; to Wm. Wood and Son, Ltd., for Rock Garden Plants; to Mr. G. G. Whitelegg, for Dwarf Shrubs and Rock Garden Plants.

*** *Our remarks on the Trees and Shrubs, Roses, Hydrangeas, Formal Gardens, Educational exhibits and Horticultural Sundries, etc., will be published in our next issue.*

HOME CORRESPONDENCE.

Ceanothus rigidus.—Ten years ago, on the advice of Sir Harry Veitch, I planted two plants of this Ceanothus against the east wall of Burford. They never did much good, and six years ago I replaced them with new plants from cuttings These plants are now twenty-five feet high. and are a magnificent sight at the end of March, *William Lawrence.*

Osmanthuses at Wisley.—With reference to the note by *J. F.*, in the issue for May 19, on Osmanthus, it may be a matter of interest to readers to learn that at Wisley there is a plant of O. Delavayi, five feet six inches in height, and four feet six inches through. This plant is fourteen years old, and flowers profusely in April every year. The other species cultivated at Wisley include O. aquifolium and its variety variegatus, O. armatus and O. Forrestii. *B. O. Mulligan.*

Apple Case-Bearer.—When examining a plantation of Apples a few days ago I failed to find any sign of aphis or red spider on the foliage, following the use of a tar-oil wash during the winter. On the other hand, almost every leaf was attacked by one or more of the little case-beaver caterpillars. The usual plan of adding lead arsenate to the first spray fluid for control of Apple scab should account for the case-beavers, at least, I am going to watch its effect with interest. *Somerset.*

Destruction of Slugs.—These pests seem to be especially busy this spring, and although there are many substances which will kill slugs, unfortunately most of them burn the foliage. Another point often overlooked in connection with the control of slugs is that they are night-feeders, and that if any substance used is to be successful it should be dusted over the creatures and not just placed on the soil for them to crawl into. Slugs do not make a habit of crawling into substances likely to kill them. If the slugs are out on a feeding expedition and suddenly receive a dusting of say, powdered copper sulphate, the result is death; but if copper sulphate powder is merely placed on the ground it may act as a deterrent for a time, but it does not kill. The only method of dealing with an attack of slugs is to kill the pests, and under garden conditions the easiest way to success is the old method of trapping. A little bran placed on the soil and covered with a piece of board or slate will attack many slugs, which should be collected at least twice a week and destroyed. When using any of the powdered substances advocated as slug controls it should be remembered that the operation should be carried out at night. *Somerset.*

The Aftermath of Winter.—I was very interested in the article under the above heading (p. 307), chiefly because I have planted many kinds of shrubs and flowering plants during the last three years; many of these are decidedly tender, and I have been particularly struck with their behaviour, especially when compared with what we read of similar plants in more favoured districts than Derbyshire. The article in question, amongst other things, states that Senecio Greyii has a bad name for hardiness; in these gardens, and in some instances in not at all favourable positions, each plant has come through the winters unscathed. Senecio rotundifolia had its soft top damaged, but will I believe, survive. We have many Cistus plants which look quite happy after the winter, although one must admit some of the older plants were badly damaged. The writer also records that the Ceanothus family suffered even on walls; in our case, I think the Ceanothuses have come through very well. Spartium junceum and Santolina have also escaped serious injury. A horticulturist in east Kent informed me that he had never known such havoc amongst this class of shrubs in that district as during the past winter, whereas, with us, most of the Veronicas are looking quite happy, and even some of the broad-leaved kinds (usually much more tender) have, in most cases, escaped serious injury. Bamboos are present consist of only a few varieties, but these have wintered well. In a gardening paper this winter, I read that Azara microphylla had been killed by frost in a garden in Hertfordshire; with us, and not in a really good position, it has withstood several winters, but this year the soft points of the shoots were damaged, but nothing serious. Choisya ternata, young plants, are especially fresh in the foliage and quite healthy, fresher than I have often seen them in Kent after the winter. Solanum crispum (Glasnevin var.) is starting well into growth. Leptospermum Nicholii was killed, but L. Chapmani has survived, and Lonicera nitida is thriving in all situations; some Pittosporums have survived. It occurs to me that for the majority of these shrubs verging on the borderline of tenderness, protection from cutting winds is a most important factor in their chances of surviving a severe winter. Apart from losses amongst shrubs, etc., I have heard many laments from various sources regarding several losses in the crops of winter greens; in Bedfordshire, for instance (where so much is grown for market), many growers lost very heavily. In contrast to this, our Brussels Sprouts, Broccoli, Borecole and Savoys, and winter greens of all kinds came through the winter unharmed. Looking at the results all round, it seems that we escaped the severity which was apparently experienced in the south in greater measure than is usual. *J. G. Weston, Chetsworth Gardens.*

——With reference to the interesting article with the above heading on page 307, it may be of interest to mention a few of the young plants or shrubs which have been lost or which have escaped during the winter we have passed through, which has been one of the worst on record for plants of any degree of tenderness. The bulk of these were in a narrow border against a south-west wall, the most sheltered spot available in my garden, which is an inland one in the east of Kirkcudbrightshire. The Cistuses are special favourites of mine, and have, I regret to say, suffered severely. Those which have died include C. hirsutus, C. populifolius, C. Clusii and C. cyprius, and the hybrid C. Sunset. The survivors are C. corbariensis, C. ladaniferus, C. acutifolia, C. purpureus, two forms; and C. monspeliensis. In the same position Buddleia globosa and B. glaucescens are gone, and, also, much to my surprise, B. nanhoensis. B. alternifolia has survived in the same position, and a large plant of B. variabilis Veitchii in an open border has come through successfully. Convolvulus Cneorum, in the aforesaid border, against a wall, has died, and in the same border and in another facing almost due south, Clianthus puniceus and C. p. albus have both perished. In other parts of the garden several young Berberises have died, but more mature specimens have all lived, and have not suffered. Olearia argophila is gone, but O. Haastii has not suffered in the least, although in a former garden not far distant, this was cut to the ground one winter. Corokia Cotoneaster has been cut to the ground, but is growing away from the base. I have not yet exhausted my examination and record of my shrubs, which are mostly young, but I have no doubt that some of my fellow Gallovidians who live nearer the sea will have a more cheerful tale to tell. *S. Arnott.*

Apple Grafting Experiments.—Apple trees of the burr-knot type, which produce aerial-rootlet growths from the numerous "warts" in the stem, make excellent stocks on which to graft. It is only necessary to plant a branch in the ground to make a tree of it. I had a tree of Herring's Pippin grafted on one of these stocks, and during the winter pruning, after Christmas, I cut off three branches carrying grafts and placed them in the soil; at the end of April, I lifted one and found that it was furnished with numerous small roots. As a further experiment, I have used these cuttings as stocks and grafted on to them, and I believe that I shall get very good results. I may mention that in the ordinary way, so long as stocks, whether Crab or Paradise, are planted before Christmas, they may be grafted during the following spring with good results. *W. F. Farmer.*

Medicinal Value of Vegetables.—The Onion is of great value, as it is almost the best nervine known. No medicine is so useful in cases of nervous prostration and there is nothing that will relieve and tone a worn-out system so quickly. Onions are useful in all cases of cough, colds, influenza and consumption, besides sleeplessness, scurvy, gravel and kindred liver complaints, also dropsy. Eaten every day, they soon have a clearing, whitening effect on the complexion. Onions are excellent blood purifiers, and will eradicate boils and blood humours. A raw Onion eaten by those suffering from a hard cough will loosen the phlegm almost immediately. Coffee taken afterwards will sweeten the breath. One of the best and simplest cures for insomnia is the odour of raw Onions. The bulbs should be smashed to pulp in order to free all the juice and the odour inhaled for ten minutes before retiring. It will quieten and relax the most overwrought nerves. Tomatos stimulate a torpid liver and are good for arthritic and diabetic troubles. Carrots and Parsnips clear the blood and clear the complexion. Spinach, Beet and Turnips add iron to the blood. Lettuces are good for worn-out nerves and insomnia; Mint for flatulence; Asparagus for kidneys; Celery for rheumatism, and eaten daily has proved a cure for nervous debility and palpitation of the heart. All kinds of green vegetables eaten in the spring help to cleanse the blood and regulate the system. *G. S. Townend.*

New Moon Sowings.—The belief that the moon has an influence on the weather is more or less general in the country districts, as a change of the moon is known to bring about a change in the weather. Some people have also noticed that if one's hair is cut during the first quarter of the moon it grows more vigorously than if cut when the moon is on the wane. In like manner many gardeners believe that if planting and sowing are done while the moon is young results are far superior than when these operations are carried out during the last stages of the moon. Some gardeners adhere strictly to this principle as they consider the advantages are large in comparison, in fact, the difference is so marked that it has caused amazement among those not conversant with the principle. Although this beneficial influence on the growth of plant life has been known and practised from time immemorial, its origin appears to have been lost in antiquity, like many other old and worthy customs. It is interesting to note that among the blessings promised to Joseph in *Deut.* 33, we read of "the precious things put forth by the moon," in other words, "the growth of the moons" (R.V.) Summer fallowing is another excellent institution dating from that early period. *G. S. Townend, Offley Vicarage, Hitchin.*

Apple Orlean's Reinette.—I have been greatly struck by the beauty of the flowering of this Apple in my garden. The tree is a strong bush of upright growth, and the rosettes of bloom appear all along the stems to a height of ten feet or more. The tree is so beautiful as to be worth growing as a flowering shrub. As Mr. Bunyard states of it (*Handbook of Apples and Pears*, p. 100): "This magnificent fruit cannot be too highly recommended." It is an Apple that should commend itself to all Apple lovers. *G. Yeld, Orleton, Gerrards Cross.*

Notes on Canker.—Following on my recent remarks on canker (see p. 300), I have interviewed a grower in another Cornish district, and he informs me that his orchard, one of the best in Cornwall, has been badly attacked with canker during the past two years, particularly the better sorts of Apples. I think the weather must have favoured its development. I find that at the present date trees from which I thought I had cut out all the affected branches show occasional patches, and these branches are now cut off. In these cases only the wood of one or two years' growth are affected, and also some of the older fruit buds on the two-year growths. The present time is very opportune for dealing with cankered growths, for they show clearly, and at the same time any withered or damaged growths should be removed. *W. J. Farmer.*

Escallonia Edinburgh (E. edinensis ?).—Having read the letters or notes published on pp. 283 and 300, concerning Escallonia Edinburgh, my experience may interest your readers. In autumn, 1926, I planted one Escallonia macrantha, one Escallonia Donard Seedling, and two Escallonia Edinburgh. Last summer they flowered well. Escallonia macrantha is doing best. My opinion of Escallonia Edinburgh is that it is quite hardy if planted in a border facing south, as ours were. The soil is very heavy and round the Escallonias are Rhododendrons and Olearias. The leaves of Escallonia Edinburgh are lighter in colour and not so large as those of E. macrantha. *Charles G. Mercer, Sutton, Nr. St. Helens, Lancashire.*

CULTURAL MEMORANDA.

AURICULAS.

These should be repotted so soon as they have finished flowering; all the old compost and a portion of the old root-stock should be removed, and if they are infested with root aphis they should be carefully washed and cleaned and laid out to dry before being repotted. The potting compost should consist of a good rich loam that has been stacked, with manure, for a year and unless it is very heavy, no leaf-soil should be used; enough clean, coarse sand should be added to keep the whole open and porous.

When repotting these subjects they should be buried to the base of the bottom leaves; this is very important with Primulas of this class for new roots are produced from the stems, and annual repotting is of the utmost importance in keeping them in good health. After repotting, they may be stood in cold frames, water being very carefully afforded at the roots until they get a good hold of the fresh compost. During the summer they may be stood out-of-doors at the foot of a shady wall.

Some of the choicer varieties are slow and difficult of increase, therefore, when they are being repotted, every off-set should be secured. Seedlings of both the show and alpine varieties, raised early in the year, should be given fresh soil in pans or boxes as they require it. The so-called alpine varieties are hardier and are used for out-of-door display; choice varieties of them are, however, worthy of pot cultivation, and are very beautiful for furnishing small unheated greenhouses.

THE HARDY FERNERY.

Now that the new Fern fronds are fast developing, there is no better time for overhauling and cleaning the fernery. In the keen desire for tidiness in the garden much harm is done to Ferns by removing the old fronds too soon; they should be left until the new fronds are thoroughly developed, after which they may be removed without detriment to the plants.

Naturally, ferneries are often planted in the vicinity of, or beneath, the shade of large trees, and this results in an accumulation of leaves and sticks during the winter months. Tree leaves are the natural protective covering for Ferns and should always be left, but in the general clean-up a light top-dressing of leaf-soil, or failing this, old potting soil, may be given; it may not only improve the appearance of the Fernery, but should assist the occupants. Deep digging should never be practised; it is quite unnecessary and is in reality harmful, for many of the Fern roots are often near the surface, and these should derive benefit from a dressing as recommended, in preference to digging.

The fronds of choice, evergreen Ferns should be left until they are quite withered and the new ones are well developed.

TREE FERNS AND PALMS.

In favoured localities, such as on the west and south-west coasts, specimen Tree Ferns, hardy Palms and Cordylines may be made a very fine feature in connection with Ferns. A shady dell surrounded or nearly surrounded by trees, may be made one of the most charming features of the garden by the careful use of these subjects. Even where it is not wise to risk leaving valuable Tree Ferns out-of-doors during the winter months, specimens of Dicksonia antarctica in pots or tubs may be plunged in the open ground and left from the end of May until October without the slightest misgiving. The chief things to guard against are cutting draughts and strong winds.

In conjunction with these subjects, and in the more exposed positions of the Fernery, the New Zealand Flax, Phormium tenax, makes a welcome addition, or if flowers are preferred, groups of Lilies should be interspersed with the Ferns and specimen plants. Not only are the Lilies quite in keeping with Ferns and other foliage plants, but the conditions required by the Ferns are ideal for the majority of the hardier Lilies.

It is, of course, too late to plant Lilies this season, with a view to naturalising, but if it is desired to try the effect as suggested, those potted up and already in full growth may be utilised with every prospect of success. When all danger of severe frost is past, the pots of Lilies should be plunged beneath the surface of the ground, taking special precaution to stand the pots on stones or coarse ashes to ensure perfect drainage. Lilies grown in pots and plunged in this manner are most satisfactory in gardens where Lilies do not succeed when planted out in the natural soil.

If specimen Palms, Tree Ferns or other choice plants are plunged in the Fernery as suggested, care should be taken to see that they receive sufficient moisture at the roots. If the pots or tubs are filled with roots, an occasional dressing with a reliable plant food should be given to keep them healthy and well-coloured. During hot spells, the Fernery should be watered thoroughly at intervals and sprayed overhead during the evenings to assist in keeping the plants in good condition and their surroundings naturally moist. *J. C.*

CIDER-TASTING DAY AT LONG ASHTON.

After the record number of over one thousand visitors at the function in 1927, it was hardly expected that this figure would be exceeded on the occasion of the sampling of the twenty-fourth annual series of ciders made at the Station, which took place on Thursday, the 3rd inst. All previous records, however, were broken, and it is estimated that during the course of the day not fewer than one thousand one hundred visitors attended.

As usual on such occasions, the principal interest of the day centred in the ciders and perries made from the previous autumn's Apple and Pear crops. In all, 189 different ciders and perries were set out for examination, and of these 180 were made in connection with the Cider Competition Scheme, which has now been three years in operation. In the first year the number of entries was forty-five, and in the second year seventy-five, the current year's total thus showing a remarkable increase. While to some extent this is accounted for by the larger crop of cider fruits available from the 1927 harvest, there is no question that these competitions have aroused a very noteworthy degree of interest among growers of cider fruit, and that they are destined to exert a most marked effect on the future of the cider industry in this country, both by encouraging growers to pay closer attention to their cider and perry orchards and greater care in the harvesting and handling of the fruit, and by bringing to light new or little-known varieties of cider Apples and perry Pears of high vintage value.

As evidence of the former, not a single instance among the competition ciders and only one case among the perries showed any definite trace of taint due to faulty condition of the fruit; while the fact that several sorts hitherto practically unknown have figured in the prize lists proves the utility of these competitions in the search for varieties of superior vintage quality for future propagation. An outstanding case is that of the variety Stoke Red, which a year ago gained the first prize in the sharp class and this year was awarded the second prize in the same class, after considerable hesitation on the part of the judges as to whether it should be placed first or second. Its vintage value is thus now beyond question, and the Institute experts who have inspected the trees of the variety report that it makes an almost ideal orchard tree, and is a most prolific and consistent cropper.

In the Competition Scheme, 15 cwts. of Apples or Pears are sent into the Institute by the growers, the fruit then being made into cider or perry there under uniform conditions and treatment.

Despite the unfavourable summer of 1927, the ciders, as a whole, were of very fair quality, and in many cases were much better than could have been anticipated. Although generally lacking the body of those of some seasons, they demonstrate that given suitable varieties on the right kind of soil, even in a comparatively wet, cold and sunless summer, it is possible to produce a palatable cider by appropriate methods of making.

One of the most interesting and significant features of the awards is to be found in the prize list of the class for mixed fruit. In that class the first and fourth prizes have been given to ciders made from blends of Apples grown in trial and demonstration orchards established with trees provided by the Institute some twenty years ago. In those orchards a careful selection of varieties, at that time regarded as in the front rank of vintage Apples, was planted in proportions judged to be likely to produce a satisfactory blend. Notwithstanding the fact that comparatively young trees yield ciders inferior to the produce of the same varieties from older trees, these orchards, while still quite young, as farm orchards go, have now shown by their results the value of systematic orchard planning and selection of varieties, a lesson which should not be overlooked at the present time, when a marked revival of planting of new cider orchards is in progress.

The very heavy demands upon the time and attention of the cider-house staff of the Institute, consequent upon the large number of entries in the competitions, made it impracticable to conduct any elaborate series of experiments in cider-making during the past season. Consequently, the only other ciders exhibited were a series made from some of the leading varieties of Tasmanian dessert Apples. In view of the problem of finding methods of utilising surplus and comparatively low-grade eating Apples, the Australian Government invited the Long Ashton authorities to undertake cider-making trials with representative Tasmanian fruit. This was sent to Long Ashton during the summer of 1927, and made into cider in July of that year, according to the approved English methods. The results show that while such fruit does not by itself yield cider comparing favourably with a good standard cider made from the better-class English cider fruit, it nevertheless can yield a palatable drink when blended in suitable proportions with appropriate true vintage material.

The exhibits of cider were supplemented by a series of exhibits relating to some of the problems of cider-making and to methods appropriate for use by farmers and the smaller makers. An interesting demonstration of the freezing method of disgorging bottled cider was given at intervals during the day. A new addition to the equipment of the cider-house at the Institute which attracted considerable attention was the most modern type of storage tank for cider, which consists of a reinforced concrete vessel lined with Ebon, a proprietary article both tasteless and impermeable to air. This was erected by Messrs. Borsari et Cie., who have introduced this type of container.

Plantations.

The many attractions of the day were by no means finished with the sampling of the ciders. At intervals during the day parties of visitors were conducted around the Station plantations and laboratories by members of the Institute staff to inspect the experimental work in progress.

The experimental fruit plots embrace almost one hundred acres, and the material on these is becoming more attractive and instructive to the fruit grower each year, as in many cases the results of the experimental treatments are becoming more pronounced.

In addition to inspecting the plots, the visitors were also provided with opportunities of attending special demonstrations of the working of tractors suitable for fruit culture and of some of the newer types of spraying and dusting machines.

Demonstrations of the clearing of tree stumps by explosives were given on two occasions during the day by Mr. F. S. Casswell, of Midsomer Norton, local agent for Messrs. Nobel.

Special demonstrations were given by the Station Pathologists on the subjects of sprayer nozzles, wetting agents and Strawberry diseases.

The salient features of the technique of bark ringing to induce fruiting in vigorous Apple trees were also demonstrated on a number of trees in a variety plot.

The parties for the plantation tours assembled at the Cider House and proceeded to the experimental plots, which are practically all situated on the south side of the railway, via the old cider orchard and the recently cleared plots of the original Station plantations. These latter are in course of replanting with various sorts of bush fruit, a block of selected Raspberry varieties planted for cropping trials occupying a large proportion of the planted area. Immediately on crossing the railway the parties were directed to the demonstration on sprayer nozzles, etc., and then proceeded into the plantations.

During the tour several plots were pointed out on which work is in progress on Apple rootstocks. A major aim of this work is to provide stocks especially suited to west country conditions, and with this end in view stocks have been multiplied by vegetative methods and are now under test for bush and standard trees under both arable and grass-orchard conditions.

The plot containing the Apple trees worked on the Malling stocks now show clearly the importance of standardised rootstocks in the commercial plantation. At Long Ashton, types IX and VII produce the most dwarfing trees.

A fairly large acreage is at present occupied with seedlings of various trees and bush fruits (Apples, Pears, Plums, Black Currants, Raspberries, Gooseberries and various Rubi), which have been selected in the breeding work of the Station. The tree fruits are just entering the fruiting stage, and certain of them, especially among the Apples, show considerable promise as dessert varieties. There are also several useful Black Currant seedlings.

In addition to the seedlings raised at the Station, batches of the newer varieties of hardy fruits which have been distributed from Wisley under the joint scheme of the Ministry of Agriculture and Fisheries and the Royal Horticultural Society were noted.

Approximately eight acres of land are devoted to experiments on the manuring of Apple trees, Gooseberry and Black Currant bushes and Strawberry plants.

There are three experiments in progress on Apple trees in which the points under investigation are the use of dung and complete artificials, effects of deficiencies of nitrogen, phosphorous and potassium, and times of application of manures.

The experiment on Gooseberries has reached an advanced stage and shows that on one section of the plots where the land is fairly light that Gooseberry bushes cannot be grown successfully without the use of potash manures. The bushes which do not receive potash manures exhibit marked leaf-scorch. The Apple and Black Currant plots are still too young to give results whilst the Strawberry plots, although not yet at the stage to give final results, indicate the great value of an application of dung previous to planting.

Several plots contain material which is being used in investigations on the pruning and shaping of trees. One block of young Apple trees is of especial interest. The trees on it are to be shaped in four ways to determine how differences in shape affect the growth and fruitfulness of the trees. The pruning experiments are mostly concerned with "spur" pruning methods.

A two-acre plot planted with commercial varieties of Apple trees is to be devoted to the numerous spraying problems which confront the Apple-grower.

The incidence of "die-back" in Plums in relation to varieties and root-stocks is being studied on a five-acre block of young Plums, and incidently the plot will provide valuable information as to the suitability of the various Plum stocks in commerce for west country conditions. Several small plots are devoted to Strawberry investigations, the work relating mainly to the diseases known as "Red Plant," "Cauliflower," "Patch" and "Aphis Plant."

In the Strawberry demonstration special attention was directed to the six "abnormal" forms of Strawberry plant which are prevalent in connection with the serious Strawberry failures which have occurred during recent years. These forms are being specially studied at the Institute.

An important section of the nursery work of the Station is the raising of young cider trees for the Trial Cider Orchards in the contributing counties. At present an area of about one acre is devoted to this purpose.

The Willow beds contain about two hundred varieties which have been collected from various parts of the British Isles and abroad. These varieties vary in growth from large "timber" trees to small plants producing slender rods suitable for the making of the finest types of basketry. Recently the beds have been enlarged to accommodate a large number of seedlings which have been raised at the Station.

DEMONSTRATION OF SPRAYER NOZZLES, WETTING AGENTS, ETC.

The object of demonstrating the various types of nozzles used in commercial fruit growing was to impress on growers the importance of using definite patterns of nozzles for specific types of sprays, *e.g.*, special patterns for producing solid cones in fine mists.

A demonstration of "wetting agents" or "spreaders" was given on the previous tasting day, but it was considered desirable to give a similar demonstration on this occasion in view of the interest previously shown, and to show the efficiency of a new spreader—Agral I—which has recently been introduced by the British Dyestuffs Corporation. It is considered particularly useful for use with Bordeaux mixture, and can generally be used where casein was previously employed.

A demonstration was given of the uses of various tractors for ploughing and tilling.

FRUIT REGISTER.

APPLE BUSHEY GROVE.

THIS Apple, raised by Mr. J. T. Good, has no doubt a great future before it, both as a culinary and a dessert variety. The Bushey Grove Apple was awarded an Award of Merit by the Fruit Committee of the Royal Horticultural Society on January 31, 1922, and is recorded in the Society's *Journal* as follows:—"The fruit is a large, round, culinary Apple of excellent keeping and cooking qualities. It is pale yellow-green, with distinct stripes and blotches of crimson, covering fully two-thirds of the surface of the fruit. The flesh is white, juicy and firm. The tree is very vigorous, of upright habit, and is a heavy and regular cropper."

The keeping qualities of this variety are good, and the flavour is excellent, and is equal if not superior to Bramley's Seedling, the fruits being fit for use commercially for ten months, from August to May, inclusive. A two year-old tree, worked on the Jaune de Metz stock, produced twenty-three trusses of blooms and set seventeen fruits.

I was speaking to the raiser of this Apple only a few days ago, and he informed me that, in 1912, two years after the parent tree in its present position commenced bearing, he counted so many as forty-seven highly-coloured Apples on a branch fifteen inches long; while at the first Imperial Fruit Show at the Crystal Palace, he staged one fruit weighing twenty ounces, this being gathered from a three-year-old tree on a Paradise stock. From a similar tree he gathered from a branch sixteen inches long, seven fruits, of a total weight of five pounds, seven-and-a-half ounces. This speaks well for its cropping qualities. Commercially, this Apple is still in its infancy, but I feel confident that anyone who sets out to grow this variety extensively will find it a profitable sort. *E. Baker.*

SOCIETIES.

ROYAL GARDENERS' ORPHAN FUND.

ONE of the most successful Annual Festival Dinners of this gardening charity was held at the Hotel Victoria, Northumberland Avenue, W.C.2., on Wednesday, May 16, under the very able presidency of Gerald W. E. Loder, Esq. The tables were beautifully decorated by Mr. Harry Miles, who utilised Richardia (Arum) Pentlandii, red and yellow Tulips and yellow Irises to the fullest advantage. There was a large gathering of supporters of the Fund, and those present included the Rt. Hon. Lord Lambourne, G.C.V.O., Sir William Lobjoit, Mr. Leonard Sutton, Major F. C. Stern, Mr. and Mrs. E Sherwood, Mr. and Mrs. George Monro, Colonel and Mrs. F. R. Durham, Mr. and Mrs. William Cuthbertson, Mr. and Mrs. J. Poupart, Mr. L. Noel Sutton, Mr. and Mrs. C. H. Curtis, Mr. and Mrs. J. M. Bridgeford, Mr. G. H. Barr, Mr. and Mrs. F. A. Secrett, Mr. and Mrs. G. F. Tinley, Mr. A. Dawkins, Mr. and Mrs. J. F. McLeod, Mr. and Mrs. H. J. Jones, Mr. and Mrs. A. H. Howard, Mr. and Mrs. H. F. Hannibal, Mr. G. J. Nicholls, Mr. and Mrs. D. Ingamells, Mr. and Mrs. J. E. Dixon, Mr. T. Pateman, Mr. and Mrs. P. D. Ingamells, Mr. and Miss Howard, Mr. H. Cowley, Mr. R. B. Leech, Mr. and Miss Linford, Mr. W. B. Cranfield, Mr. J. Cull, Mr. M. Larsen, Mr. and Mrs. R. A. Witty, Mr. D. Campbell and Mr. A. Chalmers.

After the usual loyal toasts had been given, the principal toast of the evening—that of the Royal Gardeners' Orphan Fund—was proposed by the Chairman in a delightful speech. He thanked all those present for their support that evening, and said that it was on behalf of the orphans that he had to plead. Mr. Loder said that the Fund was complementary to the Gardeners' Royal Benevolent Institution, which had no means of providing for the orphans of gardeners. The orphans of gardeners are assisted by the R.G.O.F. until they are fifteen years of age, and the allowance is 5s. per week, but the Committee very much desired to raise this sum, and if the income of the Fund could be increased, it would then be possible to raise the allowance to 7s. 6d. a week. Since 1887, the Fund has distributed nearly £50,000 in weekly allowances. Mr. Loder appealed to all those present to do their best for the Fund, and extended his thanks to all those who had already given generously and to *The Gardeners' Chronicle* for its assistance in the present appeal. He referred to Mr. Lionel de Rothschild, who had been such a great friend of the charity, and to an anonymous donor who had very generously given him (the Chairman) one hundred guineas for his list.

Mr. E. Sherwood, the Treasurer of the Fund, responded, and he said that the invested funds which had to be withdrawn as a result of the war, had, during the past year or two, been very largely replaced. He said that it was from the results of the annual dinner that the charity was able to help the sixty-five orphans who were on the Fund. There were also children awaiting election next year, so the Committee had altered its rules whereby a sum not exceeding 4s., instead of 2s. 6d., could be granted to those children awaiting election.

The toast of "The Visitors" was proposed by Mr. Leonard Sutton, who coupled with it the name of Lord Lambourne. Lord Lambourne replied in his usual humorous style.

At this stage of the proceedings, the Secretary, Mr. A. C. Bartlett, announced that £1,270 had been contributed to the Fund. This was headed by the Chairman's donation of one hundred guineas, together with a further one hundred guineas which had been subscribed anonymously to the Chairman's list. Other donations included fifty guineas each from Messrs. Hurst and Son, and Messrs. Sutton and Sons; twenty-five guineas from Messrs. Rothschild and Co.; twenty guineas from the Royal Horticultural Society; ten guineas each from Colonel Stephenson Clarke, Mr. Reginald Cory, Messrs. Barr and Sons and Messrs. Corry and Co.; £10 each from Major George Churcher, Mr. W. T. Paulin, Mr. T. A. Glover and Mr. W. Cuthbertson; seven guineas each from Messrs. Stewart and Co. and Mr. and Mrs. W. Wells, junr.; five guineas each from Lord Lambourne, the Earl of Crawford and Balcarries, Baron Bruno Schröder, Mr. J. B. Stevenson, Mr. W. E. Churcher, Mr. G. W. Paton, Messrs. Charlesworth and Co., Mr. A. Dawkins, Mr. W. Marshall, Messrs. Cutbush and Son, Horticultural Trades' Association, Messrs Waterer, Sons and Crisp, Mr. Charles Heidsieck, Mr. Noel Berridge, Mr. W. B. Cranfield, Mr. Sigismund Goetze, Mr. L. Noel Sutton, Mr. A. W. Metcalfe, Mr. H. W. W. Nutting and *The Gardeners' Chronicle*, Ltd.—together with £11 from the *Gard. Chron.* collecting box; £5 each from Lord Leverhulme, Sir Otto Beit, Colonel Charles Loder, Mr. R. Loder, Mr. J. J. Crosfield and Mr. Graeme A. Whitelaw. Mrs. W. Cuthbertson also contributed £5 towards the £200 required to increase the weekly allowance to 7s. 6d. Mr. J. M. Bridgeford's list amounted to £95 and comprised five guineas each from himself, Mr. A. H. Howard, Mr. A. Watkins, Messrs. Watkins and Simpson, Messrs. J. Bodger and Sons, Los Angeles, £10 from Messrs. T. Cullen and Sons and $100 from the Associated Seed Growers' Inc., of Milford, U.S.A. Mr. H. J. Jones' list amounted to £50, and included £20 from himself and various friends and an anonymous donation of £5. Mr. J. F. McLeod's list came to £30; Mr. J. E. Dixon's, £25; Mr. A. Rayner's, £12 12s. 0d.; and Mr. W. Howe's, £10. Mr. David Ingamell's Covent Garden list amounted to the handsome sum of £280, and included donations of twenty-five guineas from Mr. F. A. Secrett, fifteen guineas from Mr. J. Poupart, ten guineas each from Mr. D. Ingamells, Mr. H. Miles, Mr. J. L. Kinnell, Mr. J. Cull, Mr. George Monro, Mr. M. Larsen, Mr. J. Collingridge and Mr. A. Ward; seven guineas each from Mr. H. F. Hannibal and Messrs. Lowe and Shawyer; six guineas each from Mr. W. Turner, Mr. R. T. Bates and Mr. Duncan Tucker; five guineas each from Mr. J. Firmin, Mr. A. Dimmock, Messrs. W. T. Ware, Ltd., Mr. John Kirk, Mr. J. Linford, Mr. R. A. Witty, Mr. A. H. Stevens, Mr. W. Maxwell, Mr. A. H. Maxwell, Mr. Frank Ladds, Mr. H. J. Edwards, Mr. H. Jolis, Mr. T. J. Poupart, Mr. W. A. Robins, Mr. W. Stevens and Mr. G. Woodstock.

The toast of "The Chairman" was proposed by Mr. George Monro, to which Mr. Loder replied. During the evening an excellent programme of music was rendered under the direction of Mr. Ralph Norris.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

MR. T. R. BUTLER presided at the meeting held at the R.H.S. Hall, on Monday, May 14, Seven new members were elected; four members withdrew £34 2s. 6d. from their deposit accounts, and the sum of £151 14s. 2d. was paid to the nominee of two deceased members. The sick-pay for the month on the Ordinary side amounted to £97 4s. 8d., and on the State Section to £69 8s. 4d.; Maternity claims totalled £11 10s. The Treasurer's statement showed a balance of £1,575 2s. 3d. The trustees were requested to invest £1,500. Grants amounting to £55 16s. 2d. were made to eleven members of the State Section towards dental and optical treatment, and sixteen other cases were considered.

Mr. G. H. Payne was co-opted a member of the Committee in the place of Mr. W. J. Penton, resigned.

ANSWERS TO CURRESPONDENTS.

NAMES OF PLANTS.—*G. B.* We do not undertake to name garden varieties of Daffodils.—*J. W.* Probably Saxifraga splendens.—*L. S.* Rose: probably Madame Butterfly; Box: Buxus sempervirens var. latifolia; Saxifrage, probably Guildford Seedling; 1, Narcissus Sulphur Phoenix; 2, a Barrii variety, not recognised.

COMMUNICATIONS RECEIVED.—J. H. B.—L. H.—J. S.—H. W.—R. E. A.—M. L. G.—A. A.—W. J. T.—A. W. A.—H. A. M.—T. B.—J. H. C.—G. P.—C. T.—W. J. B.—T. E. W.—G. W.

MARKETS.

COVENT GARDEN, Tuesday, May 22nd, 1928.

Plants in Pots, etc.: Average Wholesale Prices.

(All 48's except where otherwise stated).

	s. d. s. d.
Adiantum cuneatum, per doz. ...	12 0-15 0
—elegans ...	12 0-15 0
Aralia Sieboldii	9 0-10 0
Araucarias, per doz.	30 0-40 0
Asparagus plumosus ...	12 0-18 0
—Sprengeri ...	12 0-18 0
Aspidistra, green	10 0-60 0
Asplenium, doz.	12 0-18 0
—32's	24 0-30 0
—nidus ...	12 0-15 0
Boronia megastigma, 48's, per doz. ...	18 0-24 0
Cacti, per tray, 12's, 15's ...	5 0—7 0
Cinerarias ...	15 0-18 0
Crotons, doz. ...	30 0-45 0
Crytomiums ...	10 0-25 0
Erica Wilmoreana, per doz. ...	27 0-30 0
—coccinea, 48's, per doz. ...	12 0-15 0
—Cavendishiara, 48's, per doz.	24 0-30 0
—persoluta, 48's, per doz. ...	18 0-24 0
— — 60's, per doz.	12 0-15 0
Fuchsias, 48's, per doz. ...	15 0-18 0
— 60's, per doz.	6 0—9 0
Geraniums, Zonal, 48's, per doz.	15 0-18 0
— 60's, per doz.	5 0—6 0

	s. d. s. d.
Heliotrope, 48's, per doz. ...	12 0-15 0
— 60's, per doz.	6 0—8 0
Hydrangeas, white, 48's, per doz.	24 0-36 0
—pink, 48's, per doz.	30 0-36 0
—blue, 48's, per doz.	30 0-36 0
—large plants, above colours, each... ...	5 0—7 0
Marguerites, 48's, per doz. ...	15 0-18 0
Nephrolepis in variety ...	12 0-18 0
—32's	24 0-30 0
Palms, Kentia	30 0-48 0
—60's	15 0-18 0
Pteris in variety	10 0-15 0
—large, 60's ...	5 0—6 0
—small ...	4 0—5 0
—72's, per tray of 15's ...	2 6—3 0
Rhodanthe, 48's, per doz. ...	12 0 15 0
Roses, Polyantha 48's, per doz.	21 0-30 0
—Rambler, pink and red, each	5 0-15 0
Spiraea, white, 48's, per doz.	18 0-21 0
—pink, per doz.	21 0-24 0
Stocks, white and coloured, 48's, per doz. ...	12 0-15 0

Cut Flowers, etc.: Average Wholesale Prices.

	s. d. s. d.
Adiantum decorum, doz. bun.	12 0-15 0
—cuneatum, per doz. bun. ...	8 0—9 0
Anemones, St. Brigid, per doz. bun. ...	2 6—3 0
Arums (Richardia), per doz. blooms ...	5 0—6 0
Asparagus plumosus, per bun. long trails ...	2 6—3 6
—med. sprays	2 0—2 6
short ,, ...	— 1 0
—Sprengeri, bun. long sprays...	2 0—2 6
med. ,, ...	1 0—1 6
short ,, ...	0 6—1 9
Carnations, per doz. blooms	5 0—7 0
Cornflowers, blue, per doz. bun.	6 0—8 0
— pink, per doz. bun.	6 0—7 0
Croton leaves, per doz. ...	1 9—2 6
Ferns, French, per doz. bun.	10 0-12 0
Forget-me-nots, per doz. bun.	6 0—8 0
Gardenias, per doz. blooms	5 0—6 0
Gladiolus, The Bride, per doz. bun.... ...	18 0-24 0
—Blushing Bride, per doz. bun.	18 0-24 0
—Peach Blossom, per doz. bun.	18 0-24 0
Gypsophila, white, per doz. bun.... ...	12 0-15 0
Heather, white, per doz. bun.	— 12 0
Hydrangeas, white, per doz. bun.	36 0-48 0
—pink, per doz. bun. ...	24 0-30 0
Iceland Poppies, per doz, bun.	6 0—7 0
Iris, per doz. blooms—	
—blue	1 6—2 0
—white ...	1 6—2 0
—yellow ...	2 0—2 6
—mauve ...	1 6—2 0
Ixia, scarlet, per doz. bun. ...	2 6—3 0
—mixed, per dox. bun. ...	3 0—3 6
Lapageria, white, per doz. blooms	4 0—4 6
Lily-of-the-Valley, per doz. bun.	18 0-30 0

	s. d. s. d.
Lilium longiflorum, long, per bun.	3 0—3 6
— — short, doz. blooms ...	2 6—3 0
Marguerites, yellow, per doz. bun. ...	3 0—3 6
Marigolds, per doz. bun. ...	4 0—5 0
Myrtle, green, per doz. bun.	1 6.-2 6
Narcissus Poeticus, per doz. bun.	2 6—3 0
—double white, per doz. bun.	8 0—9 0
Orchids, per doz.	
—Cattleyas ...	21 0-30 0
—Cypripediums	8 0-10 0
Paeonies, pink, per doz. bun.	12 0-15 0
—red, doz. bun.	12 0-15 0
Pelargoniums, white, per doz. bun. ...	9 0-10 0
Pinks, white, per doz. bun. ...	2 6—3 6
Pyrethrums, single, doz. bun.	6 0—8 0
—double white, per doz. bun.	12 0-15 0
— double pink, per doz. bun.	5 0—7 0
—single pink, per doz. bun.	5 0—6 0
—single red, per doz. bun. ...	6 0—8 0
Roses, per doz. blooms—	
—Butterfly ...	3 0—5 0
—Columbia ...	3 6—4 0
—Golden Ophelia	3 6—5 0
—Richmond ...	3 6—5 0
—Aaron Ward	2 6 3 0
—Roselandia ...	3 6—5 0
—Hoosier Beauty	4 0—5 0
—Molly Crawford	3 6—5 0
Smilax, per doz. trails ...	5 0—6 0
Statice mauve, per doz. bun.	4 0—6 0
—Suworowii, per doz. bun. ...	18 0-21 0
Stephanotis, 72 pips	3 0—3 6
Stock, white, per doz. bun. ...	10 0-15 0
Sweet Peas, various, per doz. bun.... ...	9 0-18 0
Tulips, per doz. bun.—	
— red ...	12 0-15 0
— pink ...	12 0-15 0
— yellow ...	12 0-15 0
Viola cornuta, per doz. bun.	— 1 6

Remarks.—There are likely to be many short lines in the cut flower department during the next few days. Carnations in particular are already below requirements, in spite of the increased prices. Roses are also becoming firmer owing to a demand for the Whitsuntide festivities. Improved weather conditions will relieve the situation. and this also applies to Carnations and other choice lines. White blooms still remain very firm in price. A few bunches of double white Pyrethrums were on sale to-day, while the single and double coloured varieties are becoming more plentiful. Double white Narcissi from Cornwall are arriving in excellent condition. Small consignments are also arriving from Lincolnshire, and high prices are anticipated for these blooms for at least another week. Narcissus Poeticus now begins to show signs of finishing. Gladioli are increasing in quantity, some Gladiolus The Bride arriving in excellent condition from home-growers and the Channel Islands. Tulips have been spoiled by the heavy rains, and only good quality blooms have realised reasonable prices. More Cornflowers, Paeonies and Poppies are greatly welcomed. A few blooms of sweet-scented Paeonies from France were on offer this morning; these flowers always meet with a good demand whenever available. A good supply of white Pinks are also arriving from across the water and Cornwall. The newest arrivals are Statice Suworowi, a few moss Roses and Gypsophila elegans from home-growers. The best varieties of Irises are Cajanus (yellow), Imperator, Sky-blue, Giant White and White Queen, also many other fine varieties from Cornwall and Guernsey.

Fruit: Average Wholesale Prices.

	s. d. s. d.
Apples, American—	
—Newtowns ...	9 0-12 0
Apples, New Zealand—	
—Cox's ...	12 0-16 0
—Delicious ...	10 0-12 0
—Jonathan ...	9 0-12 0
—Dunn's ...	9 0-12 0
—Others ...	8 0-10 0
Apples, Australian—	
—Cox's Victorias	11 0-15 0
—Jonathans ...	10 0-12 0
—Ribston ...	8 6-11 0
—Cleos ...	9 0-12 0
—Alfriston ...	— 10 0
Bananas ...	14 0-25 0
Cherries, French, per boat ...	6 0—7 0
Figs, Hothouse, per doz. ...	8 0-24 0
Gooseberries, per lb.	0 5—0 7
Grapes, English—	
—Canon Hall, per lb. ...	— 15 0
—Hambro, per lb.	3 0—6 0
Grape Fruit—	
—Florida ...	— 32 6
—Honduras ...	— 30 0
Lemons, Messina and Palermo, per case ...	20 0-24 0
boxes ...	14 0-16 0

	s. d. s. d.
Melons, Hothouse, each...	3 0—5 0
—Cantaloupe, each	15 0-25 0
Nectarines, per doz.	18 0-48 0
Oranges, per case—	
—Valencia and Denia, per case	20 0-35 0
—Jaffa ...	18 0-19 0
Peaches, Hothouse, per doz.	6 0-36 0
Strawberries, per lb.	3 0—8 0
South African Fruits—	
Grapes—	
—Waltham Cross	12 0-15 0
—Almerian ...	10 0-12 0
—Henab Turki	— 20 0
Pears, New Zealand—	
—Winter Nelis	3 6—5 0
—Josephine de Malines ...	4 0—6 6
—P. Barry ...	— 4 0
Pears, Cape—	
—Josephine de Malines ...	5 0—7 0
Pears, Australian—	
—Winter Nelis	6 0—7 6
—Beurre Bosc	8 6-10 0
Pineapples, per case	21 0-36 0

Vegetables: Average Wholesale Prices.

	s. d. s. d.
Asparagus,	
—Lauris ...	1 0—1 6
—Evesham, extra special ...	10 0-20 0
— — special ...	5 0—7 6
— — best ...	3 0—3 6
—Cambridgeshire	1 0—1 6
—Devon ...	5 0-10 0
—Cavaillon ...	1 0—1 2
Beans, Madeira, per box ...	3 0—4 0
—Guernsey, finest, per lb.	1 3—2 0
—Worthing ...	1 3—1 6
Beets	5 0—6 0
Carrots, New, doz. bun.... ...	0 6—0 9
Cucumbers, doz. 36's, 42's, 48's	12 0 16 0
Endive, Cornish, per doz. ...	1 6—2 6
Leeks, per doz.	2 0—2 6
Lettuce, English	2 0—4 0
— French Cos ...	6 0—8 0
—French, round, per doz. ...	2 0—4 0
Marrows, Forced per doz. ...	9 0-18 0

	s. d. s. d.
Mint, per doz. bun.	3 0—5 0
Mushrooms—	
—Cups ...	2 0—3 0
—Broilers ...	1 0—1 6
Onions—	
—Dutch ...	15 0-16 0
—Spanish ...	18 0-20 0
Parsnips, cwt. .	5 0—6 0
Peas—	
—English, per lb.	2 0—2 6
—Guernsey, per lb.	1 0—2 0
Potatos—	
—English, cwt.	7 0-12 0
—Spanish, cwt.	24 0-26 0
—Guernsey, new, per lb. ...	0 4—0 5
—Jersey, per lb.	0 4—0 5
—Azores, new	15 0-18 0
—Canary ...	17 0-19 0
Tomatos, Canary Islands ...	15 0-20 0
—English, pink	9 0-10 6
— — pink and white ...	10 0-11 0
— — white ...	8 0—9 0
— — blue ...	8 0—9 0
Turnips, New, doz. bun. ...	0 6—0 9

Remarks.—Weather conditions recently have not been favourable to the fruit trade, but in spite of rain and cold the general conditions in Covent Garden from a trading point of view may be considered good. The choice fruits department has been handling increasing quantities of Grapes, Peaches, Nectarines, Melons, Figs and Strawberries, and the tone is moderate. South Africa is still sending some Grapes and Pears, and supplies of both fruits are also arriving from Australia, as well as comparatively heavy supplies of Apples. Gooseberries from Devon and Kent are not very plentiful, but prices are fairly good. English Tomatos remain at about the same selling level as last week Cucumbers, however, have undergone some reaction from a price point of view and are considerably cheaper, the weather being an adverse factor in this section. Supplies of Asparagus from France show some falling off and home-grown produce has improved in value and is now selling much more freely since last week end. Hothouse Beans are an improved market. Forced Marrows are also realising more money. Hothouse Peas, however, are a shade lower in quotation. Mushrooms remain steady both in supply and demand. New Potatos from Spain, St. Malo, Jersey, Guernsey and the Canary Islands are available, and are a brisk trade generally. The green vegetable and root crop sections are fairly busy, the selling levels all round being satisfactory. Old Potatos are an improved business for best produce.

GLASGOW.

Tulip and Daffodil supplies were on a much smaller scale last week and prices recovered somewhat from their recent low levels. Well-grown Clara Butt Tulips were worth from 4d. to 9d. for 6's; Bartigon and Inglescombe Yellow, 4d. to 6d.; while Pheasant Eye Narcissi made 1s. 6d. to 2s. 6d. per dozen bunches. Carnations were firmer at 4s. to 5s. per dozen; Roses, 3s. to 3s. 6d.; Irises, 1s. 6d. to 1s. 9d.; Arums (Richardias), 2s. to 4s.; Lilium longiflorum, 2s. 6d. to 3s. per bunch; Sweet Peas, 1s. 6d. to 2s. for special, and 9d. to 1s. for ordinary blooms; Lily-of the-Valley, 1s. 9d. to 2s.; Paeonies, 1s.; and Wallflowers 2s. 6d. per dozen bunches.

In the fruit and vegetable section of the market, Cherrie sold at 15s. per boat; Apricots, 16s. per crate; Tasmanian Apples, 16s. 6d. per case; New Zealand Jonathan Apples, 15s. to 16s. 6d.; Grape Fruits, 22s.; Oranges (300's), 23s. to 27s.; Scotch Tomatos, 1s, 9d. per lb.; English, 1s. 1d.; Guernsey, 1s. 3d.; and Teneriffe, 24s. per bundle. Rhubarb sold at 6s. to 7s. per cwt. Broad Beans realised 6s. per 12 lbs.; French Beans, 1s. 4d. per lb.; Scotch-grown Cucumbers, 7s. per dozen; Dutch, 5s. to 6s.; Mushrooms, 3s. per lb.; Radishes, 2s. 6d. per dozen bunches; Carrots and Turnips, 1s. 2d. per bunch; Syboes 6d.; Maltese Potatos, 24s. per cwt. for round varieties, and 28s. for kidney-shaped tubers.

GARDENING APPOINTMENTS.

Mr. Wm. H. Blackwell, previously for nine years Gardener to Y. B. Almond, Esq., Standish Hall, near Wigan, and for five years Gardener to S. Pearson, Esq., Park Hill, Hale, and latterly for the last ten years Gardener to N. Cook, Esq., as Gardener to the same gentleman at Low Mere, Hale, Altrincham. (Thanks for 1s. 6d. for R.G.O.F. Box.—Eds.).

Mr. F. Horn, for the past four-and-a-half years Foreman at Buscot Park Gardens, Faringdon, Berkshire, as Gardener to Colonel J. A. Innes, D.S.O., J.P., Froyle Place, Alton, Hants. (Thanks for 2/6 for R.G.O.F. Box.—Eds).

Mr. C. C. Gray, for the past six-and-a-half years Gardener to Mrs. E. Bain, Poyle Manor, Colnbrook, Bucks., as Gardener to Major A. M. Sassoon, Piggotts Manor, Letchmore Heath, Watford, Herts. (Thanks for 2/- for R.G.O.F. Box.—Eds.).

THE LATEST TRADE MARKS.

This list of Trade Marks, of interest to readers, has been selected from the Official Trade Marks Journal, and is published by permission of the Controller of H.M. Stationery Office.

SANITEX.

487,607.—Dust bins, of ordinary metal.—Thomas Marshall, trading as Thomas Marshall and Co., 46, Armley Road, Leeds, Yorkshire. May 9.

BURGOYNE'S.

485,794.—Chemical substances used for veterinary and sanitary purposes.—Burgoyne, Burbidges and Company, Limited, High Street South, East Ham, London, E.6. May 2.

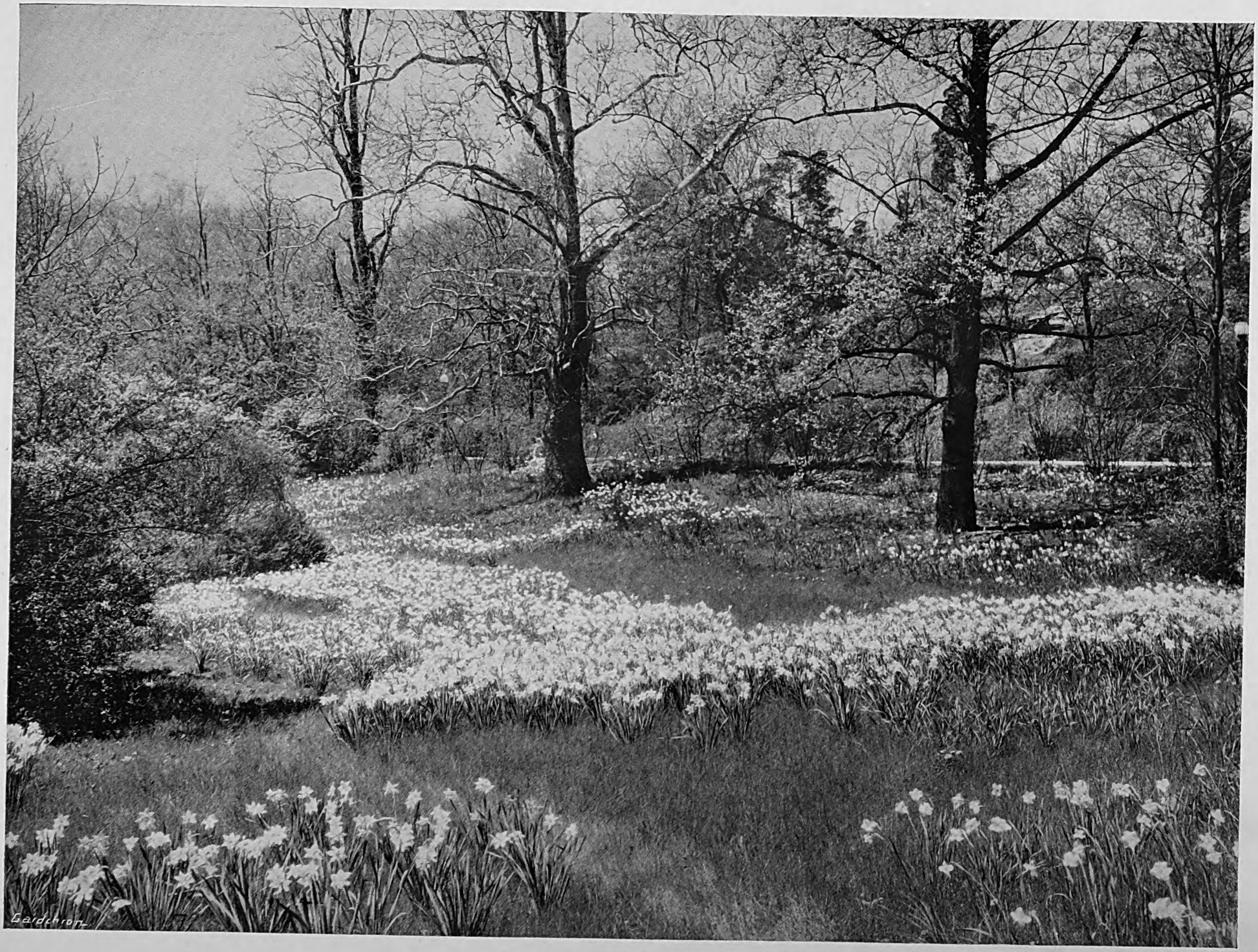
PRESIDENT.

489,606.—Chemical substances used for agricultural and horticultural purposes.—Co-operative Wholesale Society, Limited, 1, Balloon Street, Manchester. May 2.

DAVIAL.

489,476.—Sacks, bags of textile materials, crates (wooden), baskets (not of metal), cartons (cardboard), and the like containers (made of material covered by class 50), for conveying fruits and vegetables.—Allsop and Davis (Farm Produce), Limited, Kirton, near Boston, Lincolnshire. May 2

Supplement to the GARDENERS' CHRONICLE.



DAFFODILS AT KNOLLWOOD, NEW YORK.

THE
Gardeners' Chronicle
No. 2162.—*SATURDAY, JUNE* 2, 1928.

CONTENTS.

Alpine garden—
  Erinus alpinus ... 394
  Linum monogynum 394
  Nierembergia rivularis 394
Apple capsids, note on 399
Book, notice of—
  Lilies and their culture in North America 400
Foxgloves, hybrid ... 380
Fruit garden—
  The failure of the Strawberry ... 400
"Gardeners' Chronicle" seventy-five years ago 391
Glasnevin, notes from 398
Hardy flower border—
  Paeonia Witmanniana 395
Herbarium and timber specimens 390
Hollyhock, the ... 396
Humulus, inter-specific grafting in 396
Indoor plants—
  Boronias 394
Manures for June ... 399
Plant raising centre for Manchester Parks ... 390
Plant registered, new 400
Primula Conference ... 405
Pyrus Malus, Russell's Weeper, award to... 400
Rose conference, an international ... 389
Societies—
  National Viola and Pansy 406
  Royal Horticultural 401
  Wiltshire Agricultural 406
Trees and shrubs—
  Fabiana imbricata... 395
  Fendlera rupicola ... 395
  Rhamnus Alaternus 395
  Rhododendron punctatum... 395
Week's work, the ... 392
Welsh garden, notes from a 397

ILLUSTRATIONS.

Aethionemas at Glasnevin 398
Azaleas, Rhododendron ledoides and R. calostrotum at Glasnevin 398
Bulbophyllum Binnendijkii 394
Calceolaria Darwinii 390
Chelsea Show: exhibits ... 393, 395, 399, 401, 403, 404, 405
Odontioda Mrs. R. F. Felton 397
Odontoglossum Mona var. Regina 391

Supplement Plate.

Daffodils in the Woodland.

Average Mean Temperature for the ensuing week deduced from observations during the last fifty years at Greenwich, 58·2°.

Actual Temperature.—
The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London, Wednesday, May 30, 10 a.m. Bar. 32. Temp. 62°. Weather, Fine.

Hybrid Foxgloves.

The common Foxglove, Digitalis purpurea, belongs to the small class of perfect plants. It has grace and hardiness. Wherever the soil is free from excess of lime, it will grow and maintain itself. So prolific, indeed, is Digitalis purpurea that thinning of the self-sown seedlings has to be practised if this graceful plant is not to overspread its welcome by reason of its exuberant fertility. Of Digitalis purpurea, it may be said—what cannot be said of all garden plants—that the improved varieties are indeed improvements. In point of fact we owe much to our seedsmen in selecting races distinguished by larger flowers with pure tints, which combine these desirable qualities with the gracefulness of the wild species. If there be a defect in this otherwise perfect plant, it is that its range of colour is somewhat limited. There are, of course, the pale purple and dark purple races with dark purple spots, the pure white unspotted race, the white with purple spots and the yellow race. Hybridists interested in raising new garden races have therefore attempted from time to time to add range to the colour of Foxgloves by crossing species; Digitalis purpurea, D. ambigua and D. lutea have all been mated, but, so far, crossing does not appear to have resulted in the production of anything better than, or even so good as, the natural species. Nevertheless, the crosses which have been made are interesting. Like so many hybrids, those of Digitalis are for the most part sterile. Not always, however. The Lutz hybrids, for example, are certainly species hybrids, probably produced by crossing Digitalis purpurea and D. ambigua. Messrs. Buxton and Newton* have repeated this cross, and have found that whereas when D. ambigua is the female parent no seeds result, yet when the cross is made the other way (D. ambigua × D. purpurea), hybrid seedlings may be obtained in considerable numbers. As so often happens in crossing species, the F_1 hybrid is intermediate in all respects between the parents. In the present case, the leaf of the hybrid is less broad than that of D. purpurea and broader than that of D. ambigua, and the flowers, whilst partaking, albeit somewhat dowdily, of the magenta of D. purpurea, show also the yellow of the other parent. The slender grace of the purple Foxglove, as in the F_1 hybrid, is somewhat bloated by the spreading floral habit of D. ambigua. Messrs. Buxton and Newton have, however, carried their experiments a step further, for they found that of fifty F_1 hybrid plants raised and flowered, one or two ripened capsules containing viable seeds. From these seeds some two hundred F_2 plants were obtained; nearly one hundred of the F_2 seedlings flowered and showed themselves true to the F_1 intermediate type, except that their flowers were distinctly larger than those of the F_1 hybrids or of the parents. There is hope for those who care to entertain it that a race of giant-flowered hybrid Foxgloves may spring up in our gardens; for these large-flowered F_2 hybrids are fertile enough—about seventy-five per cent. of them setting good seeds. The hybridising experiments of Messrs. Buxton and Newton are of even greater interest from the point of view of genetics. The parent species D. purpurea and D. ambigua have each fifty-six chromosomes in their body cells, and as is normally the case, half that number (twenty-eight) in each of their sexual cells. In hybridisation, twenty-eight purpurea chromosomes brought by a sexual cell of one parent, pair with twenty-eight brought by a sexual cell of the other. It is not surprising that such a nuclear combination should usually fail when the hybrid comes to the task of producing its sexual cells. Hence, as a rule, the hybrid is sterile. But necessity is the mother of opportunity and the divine injunction to increase and multiply is not to be ignored. Now and again the F_1 plant succeeds in obeying it by doubling the number of its chromosomes. Instead of fifty-six, it produces one-hundred-and-twelve. In these occasional cases the problem of the formation of sexual cells is solved. They contain each a set of twenty-eight purpurea, and a set of twenty-eight ambigua, and when one or other of these sexual cells meets its mate they fuse and produce fertile plants with the double number (one-hundred-and-twelve) of chromosomes. This explanation, arrived at by microscopic investigation of the cells of the species and hybrids, fits the facts excellently well. The fertile F_2 hybrids, like the F_1 hybrid, are with respect to their chromosomes enlarged editions of the two parents, and in that guise they appear intermediate in form and more massive in build. Why, however, the F_2 hybrid should display an enlargement more liberally than the F_1, is a subject which deserves fuller investigation, if only because it would seem to show that the chromosomes, although they may be and undoubtedly are, of greater importance in determining plant characters, are nevertheless not laws unto themselves alone, but have to submit to some influence exerted by the cytoplasm. For in the F_1 hybrid the cytoplasm in which the two fused sexual nuclei of the parents were nurtured was D. purpurea cytoplasm, whereas that in which the two fused sexual nuclei of the F_1 hybrid matured was half-and-half cytoplasm. One word of criticism may be mixed with the praise due to the authors of this interesting paper. Bibliographies attached to scientific papers should be fairly complete. That attached to this paper is not. It omits reference to comparatively recent work, both on the genetics of Digitalis purpurea and on hybrids between Digitalis species. It also omits to mention the station at which this interesting and valuable piece of work was done—we suspect, however, that it is the John Innes Horticultural Institute.

Our Supplement Plate.—The scene depicted in the Supplement Plate presented with the present issue represents one of the many beautiful pictures created by naturalising Narcissi in Mr. Price's fine garden at Knollwood Farm, Port Chester, New York. Another view of Knollwood, representing Narcissi by the water side, appeared in our issue of April 21 last.

Whitsun Holidays.—The wonderful weather conditions which prevailed over the Whitsun holidays resulted in the thorough enjoyment of this festival by many millions of holiday-makers. Many of the coastal resorts reported record numbers of visitors for this season of the year, and all the public parks and open spaces in and about London were crowded; amongst the most popular places were Richmond Park, Kew Gardens, Hampton Court, Box Hill, Ranmore Common and Epping Forest. London itself, however, was not deserted, for thousands of people from the country arrived and spent the holiday sight-seeing. The river Thames was especially the scene of holiday activity, for the conditions were ideal; while many thousands enjoyed a holiday amidst the peaceful surroundings of country places.

Legacies to Gardeners.—The late Colonel Ralph Peacock, of Charter, Sunningdale, Ascot, who died on March 10, left two years' wages to his gardener, Mr. Herman King.—The late Mr. Henry Seymour Allen, of Cresselly House, Cresselly, Pembrokeshire, bequeathed £100 to his gardener, Mr. William John, if still in his service.

Intensive Commercial Apple Growing.—As several correspondents have asked for references to additional observations on "A New Intensive System of Commercial Apple Growing" (*Gard. Chron.*, May 12 and May 19), we now give them:—Barker, B. T. P., and Lees, A. H. *Ann. Rept. Agric. and Hort. Res. Stn.*, Long Ashton, 1919, and also 1920; Lees, A. H., Influence of Summer Rainfall and Previous Crop on Fruiting of Apples, *Journ. Pom. and Hort. Sc.*, Vol. V, No. 3, July, 1926.

New Park Superintendent at Dewsbury.—We are glad to learn that Mr. George H. Copley, of Swanside, Grove Road, Bridgend, Glamorganshire, has been appointed Superintendent of the Parks, Dewsbury, Yorkshire.

International Rose Conference.—The National Rose Society's Programme of the Great International Rose Conference, to be held in London from Friday, June 29, to Thursday, July 5, 1928, is as follows:—Friday, June 29: Opening of the great Summer Rose Show in the grounds of the Royal Hospital, Chelsea, at 12 noon. Saturday, June 30: Great Summer Rose Show continued; overseas and continental visitors are requested to apply for tickets to the Hon. Secretary, Mr. Courtney Page, at 28, Victoria Street, Westminster, S.W.1, not later than Wednesday evening, June 27. Sunday, July 1: Reception of visitors and members by the President and Mrs. H. R. Darlington, Park House, Potters Bar, 3.45 p.m. Motors will be available for accredited visitors and members from and to London, leaving Messrs. T. Cook and Son's Head Office, Berkeley Street, Piccadilly, London, at 2.45 p.m. Visitors and members are requested to notify Mr. Courtney Page, 28, Victoria Street, S.W.1, of their acceptance of the invitation not later than Tuesday, June 26, in order that the necessary arrangements may be made. There will be a transport charge of 4s. per head, payable by members in advance. Monday, July 2: Rose Conference, to be held at the Caxton Hall, Westminster, S.W.1 (nearest station, St. James' Park; nearest omnibus stop, Army and Navy Stores, Victoria Street). Morning Session, 10.30 a.m.: (1) Rose Species; Chairman, the President; Speaker, Mr. Arthur Osborn, Kew Gardens. (2) Genetics of the Rose; Chairman, Mr. E. J. Holland; Speaker, Major C. C. Hurst, Trinity College, Cambridge. (3) The Future of the Rose; Chairman, Mr. Herbert Oppenheimer; Speaker, the President. Interval, 1 p.m. to 2 p.m. Afternoon Session, 2.15 p.m.: (1) The Future of the Rose as a Decorative Flower; Chairman, Mr. Robert Fife; Speaker, Mr. George Monro. (2) Diseases of the Rose; Chairman, the President; Speaker, Mr. J. Ramsbottom, British Museum. Evening: Dinner at the Savoy Hotel, 6.30 p.m. for 7 p.m. Price of tickets to members and their friends, 10s. 6d. each, exclusive of wine. Ladies specially welcomed. Tickets must be obtained from the Hon. Secretary, National Rose Society, 28, Victoria Street, S.W.1, on or before June 22, in order that the necessary arrangements may be made. A remittance must accompany all requests; Morning dress. Tuesday, July 3: Visit to Kew. Visitors and members will meet at the Victoria Gate at 2 p.m. Wednesday, July 4: Visit to the nurseries in the Colchester district. Motors will leave Messrs. T. Cook and Son's Head Office, Berkeley Street, Piccadilly, W., at 10 a.m. Cost, including lunch and tea, to members and friends, 10s. per head. Tickets must be obtained not later than Tuesday, June 26. Thursday, July 5: Visit to the great Rose nurseries (under glass) in the Lea Valley. Motors will leave Messrs. T. Cook and Son's Head Office, Berkeley Street, Piccadilly, W., at 10.15 a.m. Tickets, 7s. 6d. per head, must be obtained not later than Tuesday, June 26. It is hoped that so many members and friends as possible will take part in the Conference and the excursions. Further information may be obtained from the Hon. Secretary, National Rose Society, 28, Victoria Street, S.W.1.

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* Hybrids of Digitalis ambigua and D. purpurea, their fertility and Cytology. *Journal of Genetics*, Vol. 19, No. 3, May, 1928.

Herbarium and Timber Specimens.—Almost every horticulturist and certainly everyone interested in our native plants, forms a herbarium, however limited its sphere may be; consequently, as there are always new adherents to horticulture and botany, there is a constant demand for information concerning the preparation of specimens. Such information, but of somewhat special character, is given by Dr. J. Burtt Davy and Mr. J. Chalk in a little booklet issued by the Imperial Forestry Institute, University of Oxford, under the title of *The Collection and Preparation of Herbarium and Timber Specimens*. Dr. Burtt deals especially with the preservation of specimens for a forestry herbarium, but his advice applies also to general herbarium specimens, while Mr. Chalk discusses the collection, preparation and arrangement of specimens of woods. The price of the booklet is not stated.

"Journal" of the Manchester Parks Department.—We have received a copy of the Fourth Annual *Journal* of the Manchester Parks and Cemeteries Staff Society (1928-9). This publication is issued to members of the Society; it contains the official syllabus and reviews its activities during the current year. A series of six special lectures during the winter, are to be given by authorities in widely different branches of horticulture, botany and public park work, and include talks by the Chairman of the Manchester Parks and Cemeteries Committee, Alderman T. Fox, O.B.E.; Professors Weiss, F.R.S., and Maitland, F.R.S., of the Manchester University; Mr. M. Morgan, Superintendent and Curator of the Parks Department, Crewe; Mr. W. Dallimore, Keeper of Museums, Royal Botanical Gardens, Kew; Mr. A. Hoskins, of The John Innes Institute; and Mr. A. Edwards, Chief Forester, Manchester Corporation Waterworks, Thirlmere. The new arrangements for discussions at the Manchester University Museum on Plant Life, under the guidance of Miss Wigglesworth, M.Sc., should prove of real value. In addition, tuition on botany and horticulture is given by qualified members of the staff throughout the winter to the younger men. Rambles and visits of inspection to gardens are held during the summer. Following on the visit of 150 members to the London Parks and Gardens last year, the venue of the outing this year is to Edinburgh, and a very attractive programme is set forth. The *Journal* also contains a number of interesting articles contributed by members of the Staff, and these include such diverse subjects as "Naturalising Bulbous Plants," by Mr. A. Birkenshaw; "Bird Protection and Preservation," by Mr. A. Edwards, junr.; "Autumn Foliage," by Mr. F. Harding; and "Parks Systems Extensions," by Mr. L. E. Morgan. We found much pleasure also in reading the lecture given before the Society last winter by Mr. T. Hay, M.V.O., V.M.H., Superintendent of Hyde Park, London, on "A Gardener's Bookshelf," and inserted by his permission in the *Journal*. The Hon. Secretary and *Journal* Editor, Mr. L. E. Morgan, N.D.H., informs us that there are a limited number of copies remaining, which may be obtained on application to him at the Parks Department, Guildhall Chambers, 38-40, Lloyd Street, Albert Square, Manchester, post free, 1s. 2d.

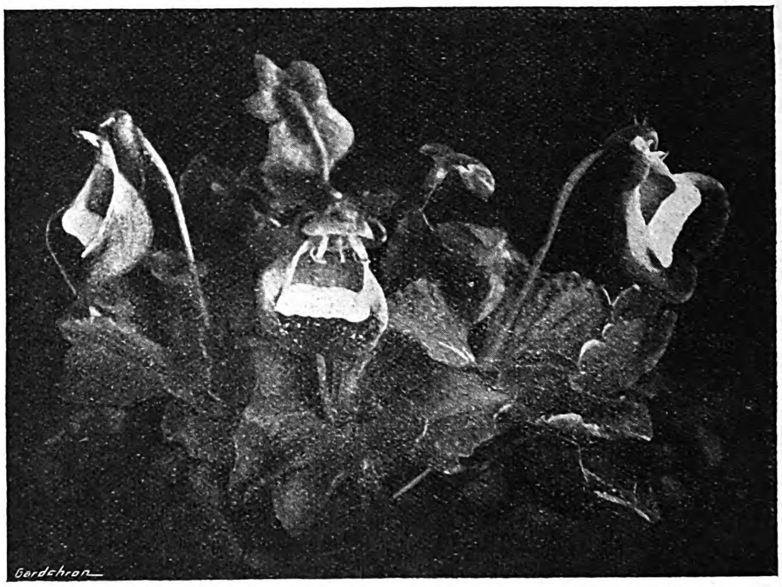

FIG. 180.—CALCEOLARIA DARWINII.

R.H.S. Award of Merit, May 22. Flowers yellow and crimson. Shown by Sir Wm. Lawrence, Bt., Burford. (see p. 376).

Japanese Flowering Cherries.—A useful little booklet entitled *Japanese Flowering Cherries*, by Paul Russell, has recently been issued by the United States Department of Agriculture. In this pamphlet, which is well illustrated with excellent photos of such varieties as the Yoshino, of which nearly a thousand trees have been planted on the border of the Tidal Basin in Potomac Park, Washington; the Ichiyo, a double, light pink sort; the Kwanzan, a double, deep pink variety with individual flowers up to two inches across; the Mikurumagaeshi, with large, single, pink blooms, and the Shidarehiganzakura. A brief history of this group of flowering trees is given. At the outset only the single-flowered types were known, but later the double-flowered sorts were given special attention, and it is stated that these were being cultivated in Japan over a thousand years ago, and the variety known as Fugenzo, now one of the most commonly grown in the United States, was cultivated by the Japanese at least five hundred years ago. About the year 1800, a large collection of selected varieties was assembled at Kyoto, Japan, and in 1886 a collection of seventy-eight varieties, represented by one thousand trees, was brought together at Kohuki, on the Arakawa River. Despite the popularity of these subjects in Japan, they are still rare to cultivation in this country and throughout Europe, but mention may be made of the collection of a number of the best varieties at the Royal Botanic Gardens, Kew, and of the large private collection of about seventy varieties grown by Mr. Collingwood Ingram, at Benenden, Kent. The botany of this group of Cherries is dealt with and it is stated that nearly all the Japanese Cherries are derived from Prunus serrulata, but there are some which have arisen from P. subhirtella, P. yedoensis and P. sieboldii; of the P. serrulata group, over one hundred are recognised by Japanese horticulturists. Many of this group are described by Mr. Russell. Of the double, pink-flowered sorts, those mentioned are the Ichiyo, sometimes known as Hisakura, the Fugenzo, the Kwanyan and Amanogawa. Of those with double, white flowers, mention is made of Shirotae and Amayadori, which are considered to be the best while among the single, pink-flowered sorts the finest are given as Mikurumagaeshi, Ariake, which signifies "dawn," and a northern form of Yamasakura (P. serrulata sachalinensis). Among those with single white flowers are Takinioi meaning "fragrant waterfall," and Shirayuki. The several varieties of P. subhirtella, P. sieboldii and P. yedoensis are also dealt with in this concise and excellent publication.

Plant Raising Centre for Manchester Parks.—Every year, over 300,000 half-hardy plants are raised for the decoration of the Manchester parks, and this has been carried out at various centres in the parks themselves, with the result that much overlapping of many branches of the propagating work has taken place. The authorities have now decided that a drastic reorganisation of the nursery methods is due, and this has been commenced by the opening of a new hothouse department at Carrington Moss, in which the whole of the parks' propagating work will be eventually centralised. So far, only one-quarter of the new department at Carrington Moss, the planning and construction of which is in the hands of Mr. W. W. Pettigrew, the Superintendent, has been completed, but the new houses are already in use. Plans have been approved for a range of houses covering some three-and-a-half acres, which is estimated to provide for the requirements of the next twenty years; they are not, however, all being constructed at once. The existing houses in the parks will be put out of use as they become too dilapidated, and the range at Carrington will be extended gradually; this work will cover about five years.

Hail Damage in Darmstadt.—A heavy hailstorm, accompanied by torrential rain, visited the high regions in the Darmstadt district of Germany on April 29. The immense volume of water rushed down to the valley carrying everything before it, and leaving in its wake a terrible toll of disaster. The worst damage was done at Zwingenberg, where entire walls were laid low and water rushed into the houses several feet deep. Large trees were broken like straws; wooded slopes were washed bare of soil, so that the roots of the trees were left exposed. The damage done in the vineyards, even worse than was at first estimated, is widespread and very serious; the local Chamber of Agriculture has voted a sum of 100,000 marks towards the relief of those affected, but much of the harm done is irreparable.

Autumn Exhibition at Antwerp.—The one-hundred-and-ninety-fifth exhibition of the Société Royale d'Horticulture et d'Agriculture d'Anvers will be held in the Grand Salle des Fêtes de la Ville, Place de Meir, Antwerp, from September 9 to September 16, and it will be of international character. M. Emile Draps, of Merxem, is President, and M. van Rysselberghe, Superintendent of the Antwerp Parks and Open Spaces, is the General Secretary. A provisional programme has been issued, containing a plan of the show and a list of the various sections, these latter including Orchids, Dahlias, Chrysanthemums, Roses, Flowering Plants, Annuals, Floral Art, Garden Designs, Fruits and Vegetables. Special interest attaches to this exhibition as it will serve as the occasion to celebrate the centenary of the Society, which was founded on March 28, 1828. Schedules may be obtained from the Secretary, 28, Rue de Moulin, Antwerp.

Mesembryanthemum or Mesembrianthemum.—On many occasions we have received communications concerning Mesembryanthemum under the title of Mesembrianthemum and have had our usual spelling—with a "y" instead of an "i," called into question; but we have adhered to the former spelling because it has the sanction of usage and botanical regulations. It is interesting therefore, to find Mr. Sprague discussing this point of nomenclature in the current issue of the *Kew Bulletin* (No. 4, 1928), and making it quite clear that although Mesembrianthemum (Breyne) appeared in 1689, the genus was recorded under the name of Ficoides (Herm.) two years earlier; both these names were rejected by Dillenius (1719) in favour of Mesembryanthemum, an entirely new name, since the substitution of "y" for "i" entirely altered the meaning of the word, without altering its sound. One of his reasons for doing so was that he did not see his way to separate the night-flowering from the day-flowering species —Mesembrianthemum *i.e.*, noon-flowering. Moreover, in 1753, Linnaeus accepted and adopted the spelling and meaning of Dillenius and "forms of spelling in vogue *before* 1753 are of significance only in so far as they may suggest that there was a typographical or othographical error in the 'original spelling.'" Mr. Sprague cites two other examples of alteration of spelling in support of his views.

Appointments for the Ensuing Week.—SUNDAY, JUNE 3: Wakefield and North of England Tulip Society's meeting. MONDAY, JUNE 4: Harrogate Horticultural Association's meeting. TUESDAY, JUNE 5: Royal Horticultural Society's Committees meet (two days); Royal Caledonian Horticultural Society's meeting. WEDNESDAY, JUNE 6: Derbyshire Horticultural Association's outing; Nottingham and Notts. Chrysanthemum Society's meeting. FRIDAY, JUNE 8: Iris Society's show; Royal Horticultural Society of Ireland meeting.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Exhibition of Vegetables.*—The first move in the exhibitions of kitchen garden produce has been made by Mr. Burns, gardener to Lord Stanhope, and Mr. Spivey, gardener to J. A. Houblon, Esq., who on Tuesday last contested the prizes in Regent Street. Burns stood first, with a collection of fifty-six different kinds of vegetables; Spivey second, having shown only ten. But if the prizes had been offered for anything except *collections*, the case would have been reversed, for, upon the whole, Spivey's were best grown; in particular, his Leeks and Broccoli and young Potatos were very good; but he had no Lettuces, his Asparagus was inferior, and even his Broccoli, though fine, not first-rate; it belonged to the Mammoth breed, but was too sulphury, and not close enough for a critical eye. We hope, for the honour of gardeners, that these two exhibitors will not walk over the course. They have practically challenged all England; everybody seems afraid of entering the field against them; and they deserve success, because of the spirit with which they have commenced this contest. Nothing, indeed, would give us more pleasure than to declare on July 26 that they had carried off all the Society's prizes and, in addition, those which have been offered by ourselves. But ought they? Will it not be a lasting shame that of all the great English establishments so proud as they justly are of their flowers, and their fruit, and their general management, two only dare venture into a competition which shall declare their relative merits in the most essential part of their business—the kitchen garden *Gard. Chron., May* 28 1853.

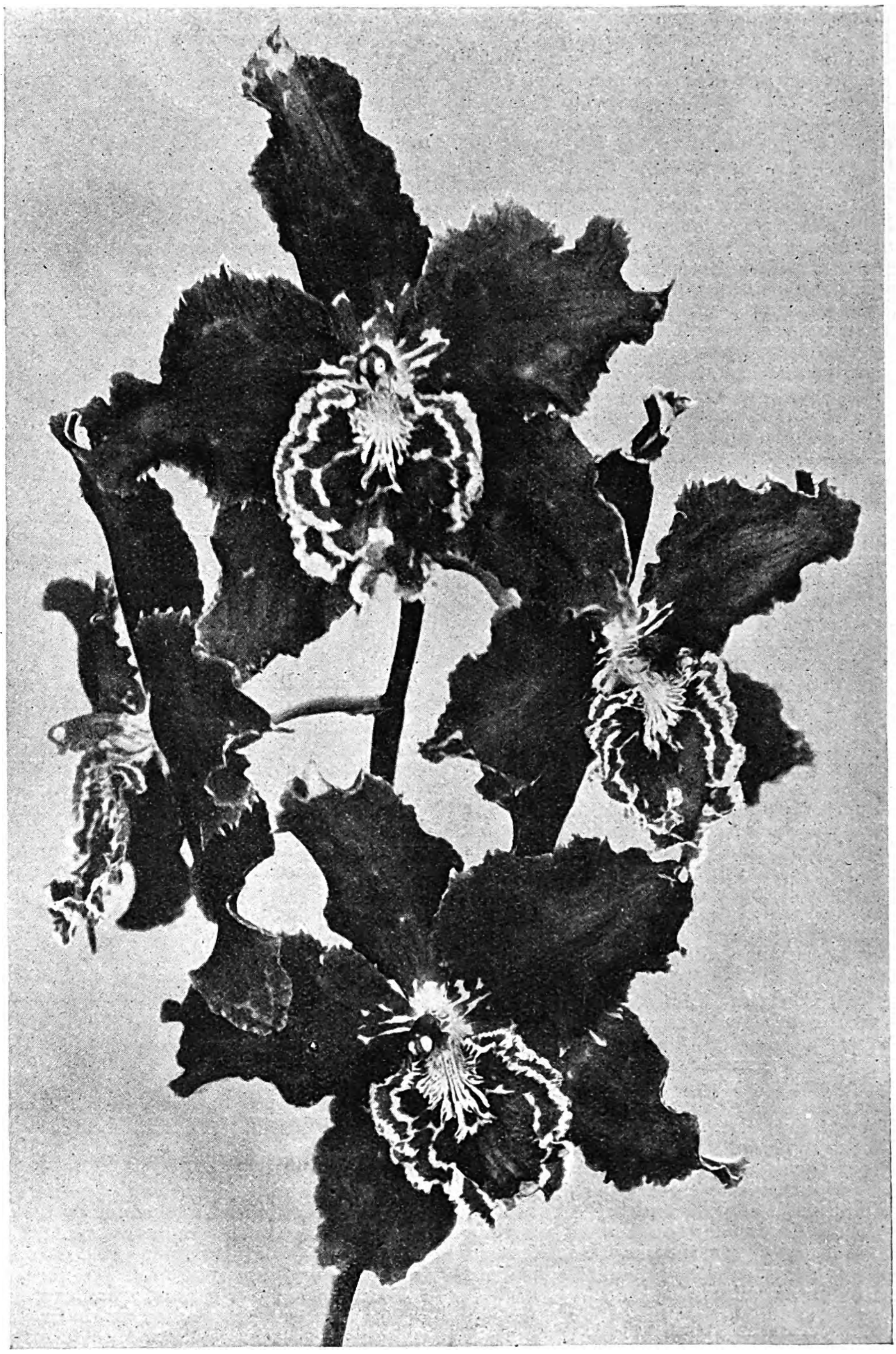

FIG. 181.—ODONTOGLOSSUM MONA VAR. REGINA.

R.H.S. First-Class Certificate, May 22. Flowers deep red-brown and rosy blush.
Shown by Messrs. J. Cowan and Co. (see p. 374).

Publications Received.—*The Easy Gardening Book*, by E. T. Brown; Stanley Paul and Co., Ltd., 8, Endsleigh Gardens, W.C.1; price 2/6 net.—*The Garden Lover*, by L. H. Bailey; price 6/6 net; *Home Flower-growing*, by E. C. Volz; price 15/- net; *Garden Cinderellas: How to grow Lilies in the Garden*, by Helen M. Fox, price 21/- net. All published by Macmillan and Co., Ltd., St. Martin Street, W.C.2

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven Moore, Manchester.

Phalaenopsis.—Many members of this genus are remarkably free-flowering subjects, and display their flowers on branching spikes in such a graceful manner as to command universal admiration. These Orchids succeed in a position near the roof-glass in the warmest house, where the night temperature does not fall below 65° at this season of the year, and with a sharp rise in the daytime, especially if due to solar heat. It is sometimes found that one particular position in the same house may suit them while in another they fail to grow well. Shading from direct sunshine is essential, an abundance of atmospheric moisture is required, and ample supplies of water at the roots are needed when the plants are growing freely, but allow the compost to get fairly dry between each application. Sufficient ventilation should be given during favourable weather to keep the atmosphere from becoming close. During the winter, or when the plants are not in active growth, very little water is required at the roots and the atmosphere should be less humid, to prevent decay of the leaves and roots. Most Phalaenopsis plants should have now commenced to produce new roots, and fresh rooting material should be given. Pans or baskets may be used and provided with ample drainage, placing lumps of charcoal with the crocks; the compost should consist chiefly of fresh Sphagnum-moss, cut moderately fine, with a little A.1. fibre added. In some varieties, where the roots cling tightly to the receptacles, the old compost should be carefully removed or washed out without disturbing the live roots; cut away all decayed roots, replace the drainage, and fill the pot with new compost without damaging the roots. By this method the plants should not receive any check. Where the plants require a larger receptacle the roots should be carefully loosened with a thin knife blade passed between the roots and the receptacle; plenty of patience is required for this operation to avoid injuring the clinging roots; after repotting, water should be given very sparingly until growth is active, when ample supplies will be required.

Sophronitis Hybrids.—Many bi-generic hybrids are now in cultivation which have Sophronitis grandiflora as one of the primary parents, and they form a group of remarkable and finely-coloured Orchids, which flower at different seasons of the year. Some of the winter-flowering kinds, such as Sophro-Laelio-Cattleya His Majesty, bloom well, even when grown near large towns and manufacturing districts. These Orchids should be grown in a light position in the intermediate house and treated similarly to Cattleyas. Care should be taken not to syringe them too heavily, for the new bulbs have a tendency to decay, and they should be examined frequently for scale insects.

THE KITCHEN GARDEN.

By Allan Falconer, Gardener to the Cheadle Royal Mental Hospital, Cheadle, Cheshire.

Peas.—The first week in June, in this district, is late enough to sow Peas to produce late crops. Ground of a heavy nature is most suitable, and if it has been prepared previously by deep trenching and manuring, good crops are assured; first-early varieties should be sown, and given every encouragement, watering, and using liquid manure during dry weather and mulching the the soil with long, strawy manure. The variety Gladstone has proved of great value, and really good Peas may be picked so late as the end of October, unless excessive frosts spoil them. In the southern part of the country the longest day is considered as late as it is practicable to sow. Avoid sowing the seeds too thickly, and thin the seedlings to six inches apart when a few inches high; stake them at the same time. A dusting of lime after sowing, and then at frequent intervals, should do much to keep vermin away, and it should also be very beneficial to the crop. Exhibition Peas require considerable attention to details. Lime plays an important part in the cultivation of Peas, and the ground should have received a good dressing when being prepared, but in addition, several dustings along the rows should be helpful, especially during wet periods. When the seedlings appear, a dusting of superphosphate should assist them, and if growth is weak, a light dressing of nitrate of soda a few weeks later may prove beneficial. Some exhibitors grow them on single stems tied to canes, and no doubt this is a good method, but where large quantities are grown, staking in the ordinary way, thinning, pinching the outside growths as they appear, and stopping at the fourth flower spike, should produce good pods. After pinching the growths, mulch the soil with long stable manure, keep the roots well supplied with clear, and manure water, and by way of a change apply some approved fertiliser. As the pods form, all unshapely and deformed ones should be removed, and care taken not to damage those which are well-formed and likely to swell.

Maize.—Plants raised in pots or boxes should now be ready to plant out in a sheltered place. In cold districts it is a decided advantage to plant them in frames from which bedding plants have been raised. Some rich soil should be prepared and the plants set out at two feet apart; plenty of moisture is necessary, also frequent applications of liquid manure. The cobs are much appreciated in some households, and make a useful change; they should be used before the seeds commence to harden, and are considered to be highly nutritious.

Pests and Diseases.—"Prevention is better than cure," and timely attention should be given to all crops in the early stages. Especially does this apply to Celery seedlings; frequent applications of soot and damping overhead each day with soot water, may prevent much waste of time later in picking off the leaves damaged by the leaf-miner, and it should also ward off aphis attacks. Petroleum emulsion used once a week at a weak strength may also deter the fly from laying its eggs. Bordeaux mixture is an excellent preventive against disease and should be used on Celery and Onions, at fortnightly intervals. Dustings of lime and soot on all young seedlings should do much to prevent the attacks of vermin, and may be used either late in the evening or early morning, when the dew is on the young plants.

PLANTS UNDER GLASS.

By J. Coutts, Assistant Curator, Royal Gardens, Kew.

Hippeastrums.—As the seeds ripen they should be sown in pots or pans of light compost, standing them in a house with a temperature of 60° to 70°. When large enough to handle, prick the seedlings into pans or boxes, and later pot them singly into small pots, giving them, when large enough, a shift into five-inch receptacles, in which size they may be flowered the first time. Some of them, if grown well, may be expected to flower at the end of eighteen months or two years from seed sowing. During that period they should be kept growing steadily without any attempt at drying off; they should, during that time, be grown in a temperature of 60° to 70°, and if they may be plunged in a bed with slight bottom heat at command, it is an advantage. They require strict attention with regard to watering, feeding and syringing; neglect in this respect is almost sure to lead to attacks of thrips and red spider. Mealy bug should also be guarded against. An alternative and excellent method is to plant the young seedlings in a bed of rich soil, well up to the glass, and with slight bottom heat. At the end of fifteen or eighteen months they may be lifted and placed in their flowering pots. Old plants, as they finish flowering, should be returned to the growing house, where they should have careful attention in regard to watering, feeding and syringing; ventilation should not be neglected during the summer months.

Coleus thyrsoideus.—This beautiful, blue-flowered Coleus is very popular for winter flowering, and may be propagated either by means of seeds or cuttings. Where stock plants exist, cuttings should now be secured and inserted in pots of sandy soil; they root readily in a close case with slight bottom heat. Potted on as they require it, they should be grown in an intermediate house in an average temperature of 50° to 55°. This subject is by no means easy to grow well, and it is not always easy to gauge its requirements, for more than once I have known its transference from one house to another to be enough to upset it. Plants rooted at this time should, if all goes well, make large specimens to plant in the conservatory beds, and towards the end of August, if three or four cuttings are placed in large sixty-sized pots, they make good plants for the stages or for general decorative purposes; if the young plants are grown on for a second year they make large specimens.

Coleus Blumei.—In its many varieties this Coleus is still popular for conservatory and greenhouse decoration. They may be grown into large specimens, or propagated at frequent intervals. Small plants, when well coloured, are very useful for general decorative work, and a batch of plants propagated now may prove very useful during late summer and early autumn.

HARDY FRUIT GARDEN.

By T. H. Tomalin, Gardener to the Earl of Bessborough, Stansted Park, Emsworth, Sussex.

Dessert Cherries.—The young growths on trees of Sweet Cherries growing against walls should be stopped at the fourth leaf, to encourage the formation of fruiting spurs along the branches. Those shoots which are required to extend the branches, or to furnish the wall space, may be allowed to grow on for a time, but the more vigorous should be stopped by pinching out the growing points when they have attained a length of one foot. This should assist the development of the weaker shoots, and thus improve the balance of the tree. Birds are extremely fond of Sweet Cherries and often attack them long before they are ripe. It is advisable therefore to net the trees securely before the fruits begin to colour.

Morello Cherries.—The young growths of Morello Cherry trees should be thinned if they are at all crowded, retaining all the best placed shoots, which should be loosely tied to the wires as they extend in length. Next season's crop will be borne on these growths, therefore they should not be stopped, but allowed to develop to their full extent, except those at the top of the wall, which may be stopped at a convenient height above the top wire. The stoning period, and just after, are critical times for the crop of Morello Cherries, and it is at these periods that a little extra attention may make all the difference between success and failure. Just before stoning, a dusting of lime on the border, watered in well, may assist the trees, and about a fortnight later a copious watering with dilute liquid manure should be beneficial to them.

Insect Pests.—Black fly is the most troublesome pest of Cherry trees, and it should be dealt with immediately it appears. Isolated colonies may be destroyed by a thorough dusting with tobacco powder, but badly infested trees should be sprayed with quassia extract, or a nicotine spray; but winter spraying with a tar-distillate wash seems to be the best method of controlling this pest. Here, trees of both dessert and Morello Cherries, treated last winter, have not been affected to date. This result, in a season when aphis has been plentiful on Peaches, and has even appeared on Apricot trees, is distinctly encouraging, and favours the extension of the use of this spray.

FRUITS UNDER GLASS.

By T. PATEMAN, Gardener to SIR CHARLES NALL-CAIN, Brocket Hall, Hertfordshire.

Melons.—At this season of the year, when the bedding plants have been transferred to their flowering quarters, there are generally plenty of cold frames available for the cultivation of Melons. If the seeds are sown now, and the outside conditions are normal for the next three months, there should be no difficulty in producing a good crop of Melons by the end of that period. A small bed of fermenting material should be made in each frame; the extra warmth should assist the young plants. The most suitable compost for Melons is a good fibrous loam, to which may be added some old mortar-rubble, charcoal and a little bone-meal. The mounds on which the young plants are to be grown should be made moderately firm, therefore the compost should be somewhat on the dry side. Too light or too rich a compost is not to be recommended for Melons, for they encourage the production of soft, rampant growth; short-jointed growths, with firm foliage, are the type required. Keep all the male blooms removed until they are needed for fertilising. Close the frames early in the afternoon, maintain a moist atmosphere, and lastly, keep the foliage clean by the free use of the syringe when conditions permit.

Cucumbers.—Where Cucumbers have to be grown in frames during the summer months the seeds should be sown now, and if there are no means of raising the plants in a suitable house, they may be raised successfully on a small hot-bed in small pots of good open compost. Other cultural details are similar to those recommended for Melons.

Successional Figs.—The second crop of Figs should now be passing through the flowering stage, and at this period of growth a little care is needed. The borders should not lack moisture, but care is needed not to overwater them. So soon as the fruits commence their second swelling, ample supplies of liquid manure should assist them to develop. Remove superfluous growths and pinch all growths that are not required for extension purposes at the fourth or fifth leaf.

THE FLOWER GARDEN.

By J. G. WESTON, Gardener to the DUKE OF DEVONSHIRE, Chatsworth, Bakewell, Derbyshire.

Hardy Climbers.—Growth now being extremely rapid, a constant watch should be kept over all climbers, as if left to themselves they quickly become a tangled mass, and very difficult to handle. Attention should be given at frequent intervals, but no hard and fast rule may be stated, as much depends on the individual plant. On walls, pergolas or dividing fences, climbers should, of necessity, be restricted more than those in the wild garden and other less formal parts.

Climbing Roses.—This popular family should soon be at its best. The young, strong, basal shoots should be tied in loosely, and if the space is limited, reduce the number of shoots to avoid overcrowding. Keep a sharp look-out for aphis, and if plants are attacked syringe them with a reliable insecticide, late in the afternoon if possible. In draughty and cold situations mildew may appear, and so soon as it is noticed the trees should be sprayed thoroughly with a good mildew specific.

Clematises and Loniceras.—These grow very rapidly and require attention every few days, as the tender shoots are liable to be broken by the wind if left unsecured. Do not train these or similar climbers in a stiff or formal manner or their great charm will be destroyed. The idea of tying them, and also of thinning the superfluous growths, is to enable those left to develop; the more loosely they are allowed to roam, the more graceful should the effect be when they are in bloom. We have found that in some situations the dead branches, cut from old Yew trees, serve excellently as supports for young climbers to start on before reaching the tree or clump of bushes they are destined to clothe. When a newly-planted climber is not likely to fill the space allotted to it, advantage should be taken of some of the strong, quick-growing climbers—including annuals—to fill the space for one season, taking care, however, that they are not allowed to encroach on the rightful occupant. There is an excellent selection of these climbers, and of these Lophospermum (syn. Maurandia) scandens, Eccremocarpus scaber, Cobaea scandens, C. s. variegata, Passifloras, Convolvulus major, the variegated Hop, Humulus japonica variegata, and the tall-growing Nasturtiums, are quick growers, and may be depended upon.

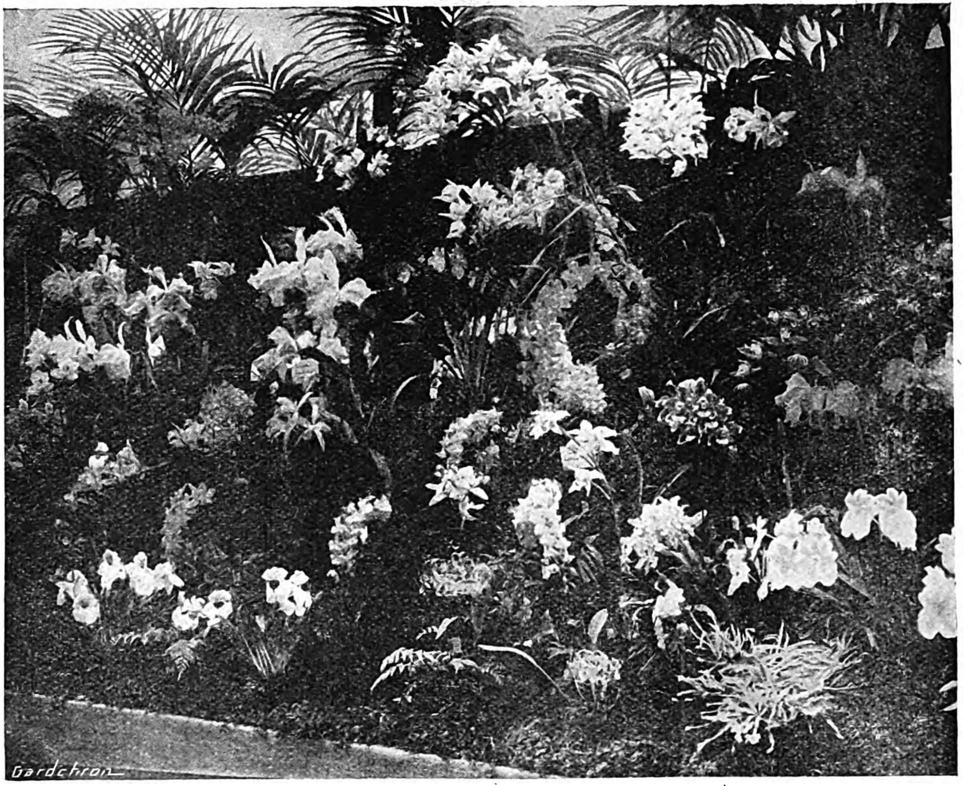

FIG. 182.—CHELSEA SHOW: PART OF MESSRS. H. G. ALEXANDER'S GROUP OF ORCHIDS. (see p. 375).

FOR NORTHERN GARDENERS.

By A. T. HARRISON, Gardener at Jordanhill Training Centre, Glasgow.

Summer Bedding.—If most of the hardier subjects that are usually employed in the scheme for summer bedding, such as Violas, Chrysanthemums, Antirrhinums, Pentstemons, Nepeta and Lobelia cardinalis, have been planted, the more tender subjects represented by dwarf Dahlias, Begonias, Heliotropes, etc., may now be put out, if they have been hardened off. This system, when well thought out and planned beforehand, reduces the risk which usually takes place at the bedding-out season, and by spreading the work over several weeks it enables those with depleted staffs to carry on the numerous pressing duties which also call for attention. By many, it is deemed expedient to wait for showery weather before commencing bedding-out on a large scale, but it is hardly necessary to point out how much more comfortably and speedily the work may be performed during dry weather, and should it be necessary to give the plants a good watering, if the weather remains dry, this may be done during the evening without interfering with the daily routine. When watering plants on a large scale it should be borne in mind that spraying them over with a rosed can or hose is not so effective as giving each plant a moderate supply direct to its roots, and in extreme cases it is advantageous to leave a saucer-like depression around each, which may be filled with water, and the loose, dry soil filled in afterwards, thus conserving the moisture.

Thinning Annuals.—This operation is often insisted upon but, alas! also often neglected. It should be performed at an early date; in fact, so soon as the seedlings have developed sufficiently to show their characteristic foliage they may be thinned to a few inches apart, and when further advanced and requiring more room, they should be gone over again and the plants to be removed at this stage may be useful for making fresh clumps, if carefully lifted with a trowel and replanted without undue exposure. No hard and fast rule may be laid down for such a varied family of plants, but if their habits are studied, and thinning done accordingly, varying from six inches apart with dwarf and slender growers to twelve or even fifteen inches apart with the more robust kinds, it should be found that the resultant plants amply repay this attention, and instead of the attenuated plants so often seen, they grow into stout, bushy specimens able to carry a magnificent crop of flowers.

Perpetual Carnations. — The young plants should now be filling their four- or five-inch pots with roots, and they should be repotted into their flowering pots. The soil used should be of the best loam procurable, and the other ingredients also the best of their kind, as this mixture has to suffice for the plants' requirements for a considerable time, nearly nine months, before it may be augmented by the addition of top-dressings of approved Carnation manures. There are many good recipes, if that word may be used in this connection, for making up the soil for this final potting, and each grower has his own, but the main idea is to provide the plants with a store of food which, while not forcing them into too active growth, keeps them strong and healthy, building up the plants during the autumn months in preparation for the winter-flowering period. The stopping of the plants should only be performed by those acquainted with the different varieties; some kinds not later than the middle of June, while others may be stopped up till mid-July.

INDOOR PLANTS.

BORONIAS.

The number of hard-wooded plants of Australian origin is unlimited, and although hundreds of species have been introduced, they are gradually dying out. The present vogue is for easily grown, early maturing plants which flower freely and may be discarded in favour of young stock so soon as finished. The lovely blue-flowered Leschenaultias, Epacris of many kinds, and the numerous South African Heaths, which were grown so well thirty years or more ago, and which were looked upon as test plants for a young gardener to try his hand at growing, are now seldom, if ever, grown.

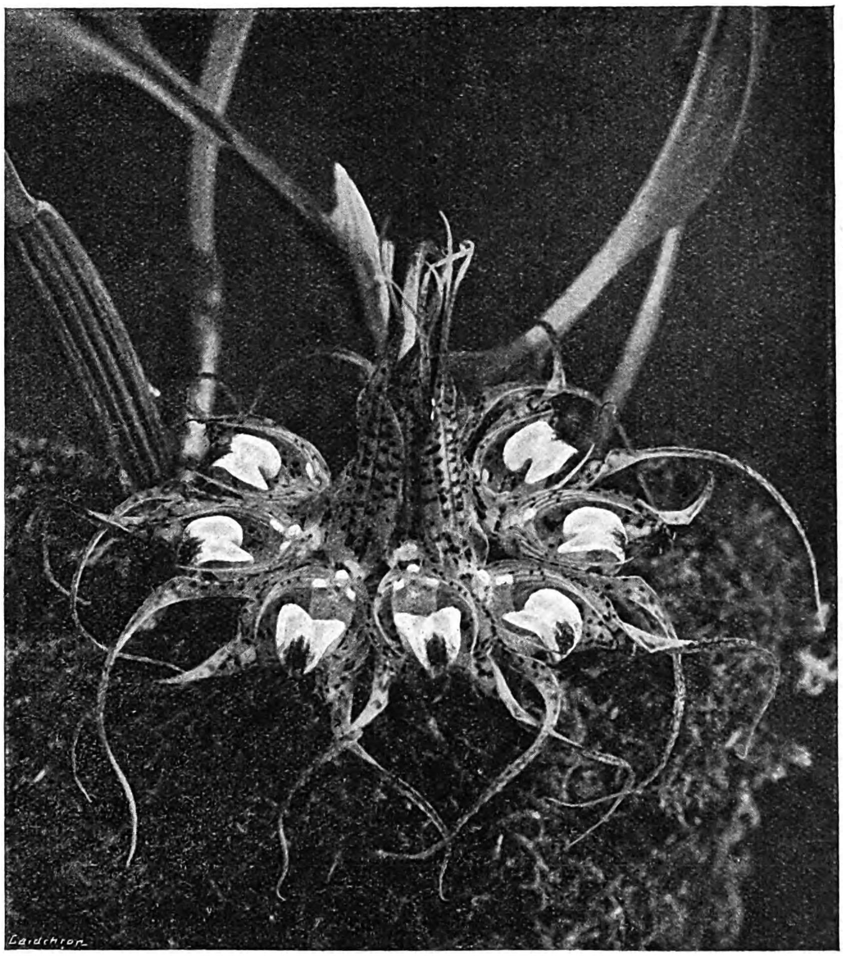

FIG. 183.—BULBOPHYLLUM BINNENDIJKII.

R.H.S. First-Class Certificate, May 22. Flowers green, purple and white. Shown by Sir Jeremiah Colman, Bt. (gr. Mr. J. Collier), Gatton Park, Reigate.

Strange to relate, there are four species of the genus Boronia which have managed to survive and are still cultivated in thousands for the London market by men who are experts with hard-wooded, indoor plants. These men are now few and far between, and I met one recently who has been doing nothing else in one nursery but propagate such plants from cuttings for the last fifty years. A knack in their treatment in the cutting stage and their after treatment, insures strong, healthy, bushy plants, some two feet in height, in about two years; in early spring and summer, these plants are placed in the market, covered with flowers, and they find a ready sale.

If they are given an open, sunny position, there is no garden where these subjects would not thrive under the conditions of a cool greenhouse. In common with other hard-wooded plants, they require an abundance of air when frost is absent. They require or rather, prefer, a sandy peat, and should be watered freely when in full growth and the pots are well filled with roots. Care should be taken to avoid any lime being present, either in the water or in the soil, for they dislike it intensely.

The four commonest species are B. elatior, B. heterophylla, both with bright, rosy-red flowers; B. megastigma, with deliciously scented brown flowers, which are usually yellow or greenish-yellow on the inside; and the tall-growing B. fastigiata (B. polygalaefolia of gardens and nurseries), which has rosy-lilac flowers. These species are available in quantities from many nurserymen, and have so far held their own owing to their own intrinsic value as decorative plants and their easy culture. They are propagated readily from cuttings of half-ripened growths during the autumn. *C. P. Raffill.*

ALPINE GARDEN.

ERINUS ALPINUS.

This charming little plant was introduced from the mountains of western Europe in 1739. It grows about six inches in height, each growth bearing a terminal raceme of small, purple flowers, three-eighths-of-an-inch across, the corolla being deeply cleft into fine segments. No place suits it better than an old brick or sandstone wall; in fact, there are several such situations in the south of England where it would appear to be almost naturalised. No matter how small the crevice, a seed or seedling will usually establish itself, and a little fresh cow-manure is useful to fasten it in with.

For a few years the plant might appear doubtful of its tenure, and flattens itself against the wall, spreading its flower stems around like the spokes of a wheel. In after years it becomes tufted, woody of stem, and grows erect towards the top of the wall. It is liable to die out during the winter when planted on flat ground, but on a wall, I have known the same plant flower for ten years at least.

Not only are they long-lived, but seeds are produced freely, and it soon spreads to other parts of the wall, springing up sometimes in quite unexpected places; indeed, not long ago, I found a good-sized plant in flower, established on the decaying bung of a water-butt. It is not necessary for the wall to be very old; some plants are growing here on sandstone walls that were only built four years ago. Moisture is necessary, and for that reason walls that are built with a "damp course," or are protected by overhanging leaves, are unsuitable.

In addition to the type, there is a pure white variety which is quite constant when raised from seeds, and also an attractive rosy-red form known as E. alpinus var. carmineus, but seedlings from it are slightly variable. Seeds of all three kinds may be purchased cheaply. *J. Comber.*

NIEREMBERGIA RIVULARIS.

Of the several species known to cultivation, N. rivularis is the only one that may be considered suitable for growing out-of-doors in this country with any degree of success. It is an attractive subject for the alpine garden, in fact, it is one of the most beautiful of those alpine plants which are used for the floral adornment of the garden during the summer and early autumn. When established, it forms dense carpets of attractive leaves, amongst which are produced in great profusion large, cup-like flowers of a beautiful, clear white colour, sometimes lightly shaded with pink.

It is by no means an easy subject to establish, but I have found it to flourish in situations exposed fully to the sun, but supplied with abundant moisture beneath the soil surface. Such positions may be secured by making beds of loamy soil, containing plenty of chips and other drainage material, on the margin of a small pool, with the surface slightly above that of the water. It may also be treated as a moraine plant, in fact, the conditions usually maintained in a moraine fulfil all its requirements.

N. rivularis increases by runners which spread in all directions, and propagation may be effected by division; if small pieces are potted into sixty-sized pots and wintered in a cold frame, they should make suitable material for planting out during the following spring.

This subject may also be treated with reasonable success as a pot plant, to assist in the adornment of the alpine house during late spring; for this purpose it should be amply supplied with water during the growing period, and the surface of the soil should be covered with a layer of chips.

POLYGONUM AFFINE.

For autumn effect on the rock garden this Knotweed is one of the most effective subjects we have, for its flowering period extends from late August to October. It forms dense clumps or hanging mats of almost evergreen leaves, which are narrow and of a fresh, pleasing shade of green and in autumn take on vivid tints of orange-red. The flowers are produced in great profusion; they are borne in neat, compact spikes, on bare stems six inches or more in height, and are of a beautiful clear pink colour.

Although this Polygonum is a native of Kashmir, it would appear to be resistant to the severity of our winter climate. It may be planted either in crevices on sunny cliffs or in drifts of loamy soil in sunny portions of the rock garden, for it is in open situations that it flowers most freely.

LINUM MONOGYNUM.

All are familiar with the several blue-flowered perennial Linums, and the yellow-flowered L. flavum is by no means uncommon, but the white New Zealand Flax, L. monogynum, is not so often seen in gardens. Without doubt it is a charming subject, graceful and neat in habit, its semi-woody growths reaching a height of about eighteen inches. They are slender,

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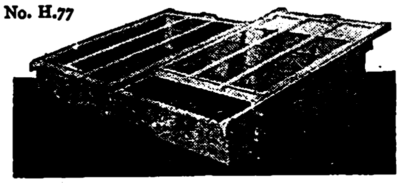

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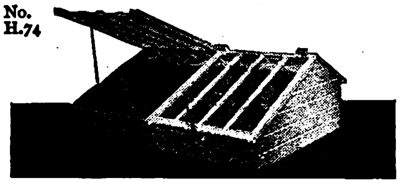

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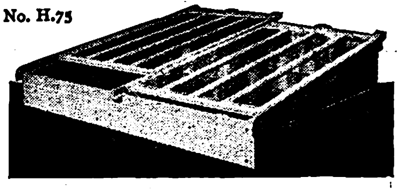

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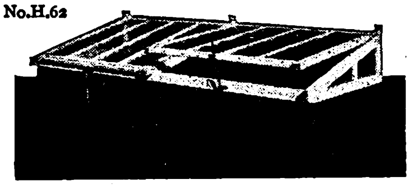

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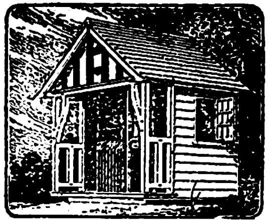

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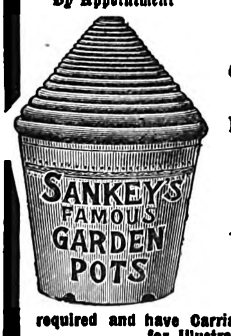

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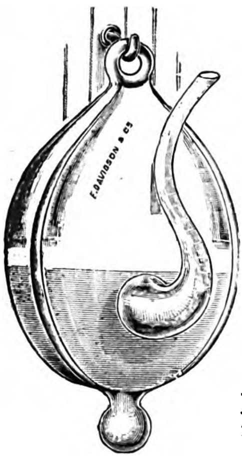

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clothed with pale green, shining leaves and bear, during the summer months a profusion of large, pure white flowers.

Although a native of New Zealand, incidentally the only Linum indigenous to that country, it may generally be considered hardy, but it is advisable to winter a few young plants of it in frames in case those in the open succumb to the severity of our climate.

In the rock garden it should be planted in light, sandy soil in warm, sunny positions, under which conditions it cannot fail to produce a pleasing effect. It may be raised from seeds and also from cuttings, young shoots rooting readily in a cold frame during the summer. *M. W., Kent.*

HARDY FLOWER BORDER.

PAEONIA WITMANNIANA.

One of the most striking of the Paeonies in the refinement of its habit and colouring, no less than in its noble, upright bearing, this species is a worthy claimant for a place in the mixed border of choice subjects. It comes from the Caucasus and mountains of northern Persia, and makes large and imposing growths nearly two feet in height. The bold, glossy foliage, of which the leaflets are egg-shaped, is a fresh pale green. Held erect above this leafage, the flowers appear in early May. They are nearly as large as a tennis-ball, almost globular, and of a glistening, golden-ivory tint. At the centre is a conspicuous cluster of yellow anthers set off by stigmas of coral-red. The flowers are, of course, single, and have a remarkably firm, waxen texture.

P. Witmanniana is a plant of sturdy growth which needs no staking under normal conditions. In the light border loam in which it grows here it has proved hardy and permanent, coming up year after year with unfailing vigour and slowly increasing in the size of the clump. As it is liable to appear above ground so early as March it is desirable to give the shoots some light protection from frost, but the plant seems perfectly winter-hardy. *J.*

TREES AND SHRUBS.

RHAMNUS ALATERNUS.

Although possessing no beauty of blossom, this free-growing, evergreen shrub has many points in its favour to justify its inclusion in the shrub garden. It forms a bushy, rounded plant and may attain a height of ten feet or more. The growths, when young, are clothed with down and are closely furnished with oval or oblong, dark, glossy green leaves, which are tapered at both ends. The insignificant, yellowish-green flowers are produced in small racemes from the axils of the leaves.

R. Alaternus is a native of south-west Europe; it is hardy, and may be recommended as a shrub of general utility. It may be increased easily by cuttings.

There are several varieties of R. Alaternus, some of which are so distinct that they have received varietal names, such as variety angustifolia, which has distinctly toothed, lanceolate leaves, much narrower than those of the type. There is also a form with leaves which are margined with creamy-white, known as var. variegata, but this is said to be less hardy than the type. *M. W.*

FABIANA IMBRICATA.

The successful resistance of last winter's frosts by this shrub is one of the few happy surprises which have helped to alleviate a sorry tale of loss. Not only in this garden, where over 20° of frost was registered in December and again in March, but in those of others, has F. imbricata proved hardy enough not merely to survive that ordeal, but to come through it without the slightest injury even to a leaf. I am unable to offer an explanation of this, for although F. imbricata is generally considered quite reasonably trustworthy in this district, I have seen it injured at the tips by frosts of less severity than those of last winter. It is, however, undoubtedly a subject for light, free soils and elevated positions, and in such is doubtless more reliable than it would be at Kew, for example.

F. imbricata is a good subject for associating with the taller Heaths, for in habit of growth and foliage it bears some resemblance to these shrubs. The long, finely-tapered branches, closely-covered with their tiny green leaves, are very attractive about mid-summer, when each small twig with which these branches are furnished, terminates in a white, tubular flower nearly an inch in length. The flowering season extends for a month or more, and such quantities of flowers are produced that the tall, upright branches suggest large racemes of blossom. A light loam and full sun are both appreciated by this shrub, and if the former should need enriching, there is nothing better than old cow manure or well-rotted vegetable compost. It does well also in sandy peat and loam, or any other medium in which Heaths do well.

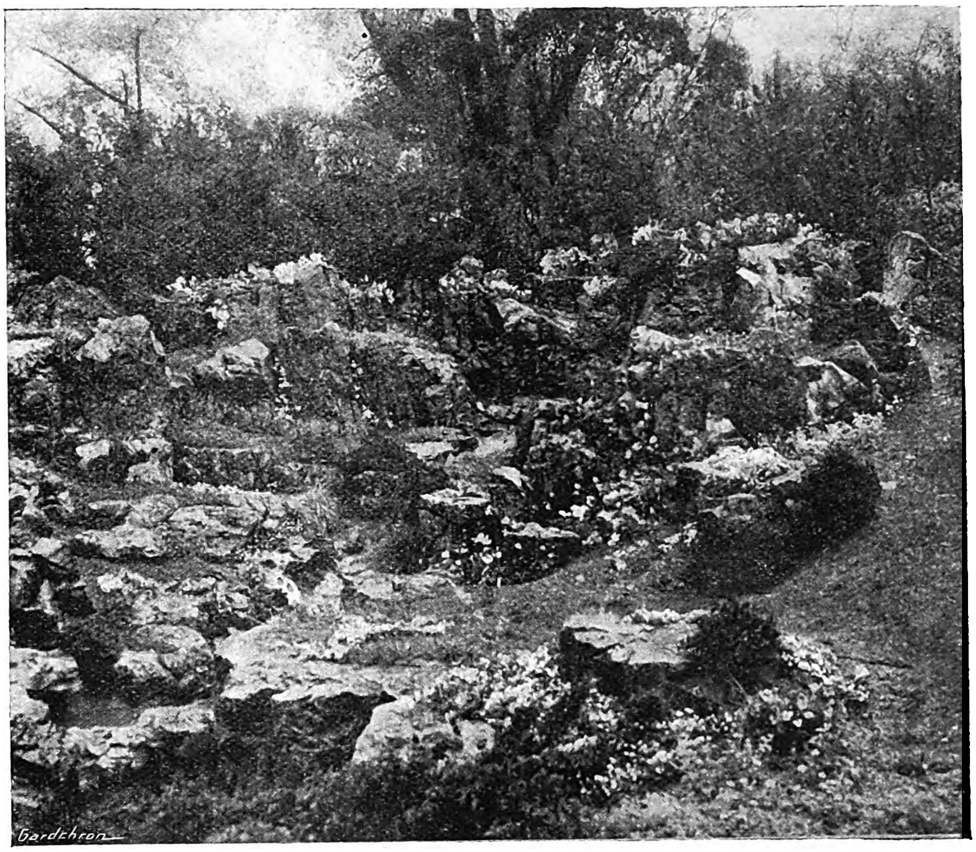

FIG. 184.—CHELSEA SHOW: MR. G. G. WHITELEGG'S ROCK GARDEN.

Awarded a Gold Medal. (see p. 379).

F. imbricata is a native of Chili, and was introduced in 1838. It attains a height of seven to ten feet in favoured localities, but is usually seen as a shrub of little more than half that stature. *N. Wales.*

FENDLERA RUPICOLA.

This interesting and beautiful deciduous shrub first made its appearance in European gardens about 1880, but it is still extremely rare in cultivation. F. rupicola is a native of south-western North America, growing on the hot, dry slopes of the interior mountainous regions; its distribution includes Texas, Arizona, Utah, and New Mexico.

It is an erect, rigidly-branched shrub, four to five feet high, of somewhat unprepossessing appearance. The leaves are small and narrow, opposite and almost stalkless, the largest being about an inch long, rough on the upper surface, hairy beneath, coarse, and tough in texture. The latter characteristic may be correlated with its xerophytic mode of existence. During May it produces a profusion of particularly attractive flowers, each about an inch in diameter and white in colour, the under surfaces of the four petals being delicately tinted with rose. Writers who are familiar with the plant in its natural habitat, state that it has, when in flower, the aspect of a young Peach tree, but in cultivation this likeness is extremely superficial.

To succeed with it in this country, Fendlera rupicola requires a thoroughly drained soil and a position against a south wall, where it may receive the maximum amount of sun. If these conditions are not available it is practically useless to attempt to grow it with any degree of success. *Thos. Blythe, Cambridge.*

RHODODENDRON PUNCTATUM.

In the semi-shade of thin woodland, its slender branches trailing elegantly down a bank, there is a distinct charm about this old Rhododendron that invariably attracts the admiration of all who see it. Yet, in spite of its fascination, its hardiness and ease of culture, R. punctatum does not seem to be often planted in these days. In my estimation, it is very superior to R. arbutifolium, R. myrtifolium or R. Wilsoni, of which hybrids it is interesting to record that it is one of the parents, while not a few of the newer species do not approach it in general garden merit.

That R. punctatum is not a showy subject may readily be admitted. Its attraction lies in the very delicate, fresh, wild Rose pink of its flowers, the rich, glossy-green leaves, dusted with red-brown scales beneath, and the easy grace of its habit of growth. Individually, the corollas are one to one-and-a-half inch across, the margins being prettily waved and the upper side spotted with orange. They are borne in neat trusses of six or seven, and the flowering season extends through most of April and May. This species is a native of eastern North America and was introduced in 1786. It has never exceeded four feet in height with me, and is therefore very adaptable for the bolder parts of the rock garden or margins of woodland paths. *J.*

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THE HOLLYHOCK.

THE Hollyhock, the giant of the flower garden, as it has been aptly called, is one of our oldest garden plants, and its majestic spikes of brilliantly coloured flowers have attracted the attention of many generations of plant lovers. The precise date of its introduction to our gardens may be a debatable point, for while those laboriously compiled works on plants, the *Hortus Kewensis* and Loudon's *Encyclopaedia of Plants* assign its introduction to this country from China to the year 1573, Turner's work, published some nine years earlier, states that "the Hollyhock was sown and grown in many gardens in England." Apparently both single and double forms were grown even at that early date, for Miller, another author of that period, mentions that he received seeds of the Hollyhock from Istria, which produced large, single, red flowers, and, he adds, "but the seeds I got from Madras produced double flowers of many colours."

Little information is available as to what time and by whom the improvement of the Hollyhock was first undertaken. It is reasonable to suppose that for a few generations there was a natural improvement in size and fullness of the flower as a result of cultivation and selection, and this would tend to enlarge its circle of admirers and encourage growers, but in olden times events were not chronicled as is the case to-day, and few facts are obtainable. Striking advances were obtained about the middle of last century, however, by a Walden shoemaker, Charles Baron, a man with little knowledge of the vegetable kingdom generally, but an ardent admirer of the Hollyhock, in the study of which he found his recreation. The distinguishing characters of the varieties he originated were: More perfect form, greater substance, closer arrangement of petals, and greater proximity of the flowers on the spike. Baron prided himself on raising good varieties entirely from English seeds, and declared that he had never in his life seen more than one or two raised from foreign seeds which he considered worthy to rank with first-class flowers.

Contemporaneous with, or immediately following Baron were others working assiduously and with more or less success, to improve this noble flower. Of these, mention may be made of Rivers, Chater, Paul, Bircham, Ward, Turner, Roake, Parsons, Bragg and Black, while Messrs. Downie, Laird and Laing, as well as other Scottish raisers, furnished their quota to the general sum of attainments. The name of Chater has since that period been closely associated with the Hollyhock, and is as closely associated as ever to-day. In a list of the thirty-six best varieties in cultivation, issued in 1872, no fewer than eighteen of them were Chater's varieties. Chater was followed by Messrs. Webb and Brand and these, in turn, by Jas. Vert and Sons.

The advance made by these raisers, from the time of the pioneer of progress—Mr. Charles Baron—down to the present day, may be thus summarised: Instead of a bell-shaped flower showing a large eye, the modern varieties have a semi-spherical flower, exceedingly double, with closely-serried petals and a flat, regular, guard-petal. The flowers are so closely packed on the stem that the leaves can scarcely be seen between them, and in the best-grown plants the spikes present a continuous sheaf of colour; there is also a much wider and varied range of colour, of many beautiful tints, ranging from white to deep glossy black, with intermediate shades and combinations scarcely surpassed by any other flower.

As a decorative plant, the Hollyhock holds a high position in our gardens and contributes much to their embellishment. Whether planted in the sun or shade, against a wall or alongside a hedge, in clumps and masses, or in single and detached specimens, this gorgeous subject is equally an ornament worthy of admiration.

Although a perennial, it is better grown as an annual or biennial, and the best strains may be relied upon to produce, from seeds, perfectly-formed, double flowers, imposing in size, colour and substance. Seedlings possess a constitution capable of resisting the deadly Puccinia malvacearum, which at one time threatened to banish Hollyhocks from our gardens, and by sowing in the open ground in June a constant supply of young plants may be maintained. Being a plant with a large weight of vegetable tissue to sustain, it is obvious that the treatment of Hollyhocks should be of the most liberal nature, and ample space should be given for development. The safety of the flower-spike should not be left to chance, but a strong stake should be provided in an early stage of development to which the spike may be tied neatly as it grows. *W. Auton.*

INTER-SPECIFIC GRAFTING IN HUMULUS.

IN 1925, in these pages,[*] we described in an article illustrated with photographs, a method of grafting varieties of the common Hop, Humulus Lupulus. As prophesied then, this method has proved very useful in the investigation of several problems connected with the Hop. By means of it, Mr. T. C. Thrupp has succeeded in showing that the mosaic disease of the Hop is a transmissible virus disease, and also that certain varieties function as "carriers" of the disease.[†] We have studied the effects of grafting varieties of Hop immune from mould (Sphaerotheca Humuli) on varieties susceptible to this disease and vice versâ.[‡]

During last year, we carried out the following experiments to ascertain whether it is possible to graft the annual species H. japonicus on the perennial species, H. Lupulus, and vice versâ.

On May 30 and June 1, two plants of the Japanese Hop, H. japonicus, were grafted with scions of the Golden Hop, and four with scions of the commercial variety Tutsham—both these varieties belonging to the species H. Lupulus. Similarly, two plants of a "wild" Hop (H. Lupulus) were grafted respectively with three and two scions of H. japonicus.

The Japanese Hops used as stocks had been raised from seeds sown in the spring. The separate plants were pricked out into pots, and on May 30, those with stems of suitable thickness (about 4 mm.) were selected for grafting. In the first two cases mentioned above, the stem was cut off at a height of one-and-a-half inch from soil level and the terminal portion (four or five inches long) of a shoot of the Golden Hop was inserted as the scion. The method used was that already described by us in *The Gardeners' Chronicle*,[‖] with the exception that the last fold of the rubber tape was secured by means of rubber solution which avoided the necessity of tying. In both cases, buds were left on the stock immediately below the position of the graft. The scion of the first had reached a height of two feet seven-and-a-half inches by June 25, and when the last record was made on August 11, it was seven feet two-and-a-half inches high, and there were a few female flowers in the axils of the leaves. The foliage was of normal golden colour and was unaltered in every respect. Both buds of H. japonicus below the graft grew out, but only one elongated considerably and reached a length of two feet one-and-a-half inch. This bore a female flower near the apex.

It was noticed that just above the place of union the stem of the scion thickened considerably, forming a bulge (8 mm. diam.) nearly twice as thick as the stem of the stock (4·5 mm. diam.). This, however, is a feature of common occurrence in grafted Hops, and is not a peculiarity of inter-specific grafting.

The terminal bud and internode of the second scion died back to a node, but growth was effected by means of two laterals which arose from the node immediately above the place of grafting. On June 25, these were both strong and healthy, and had reached a length of one-and-a-half inch. On August 11, they were two feet eleven-and-a-half inches and two feet nine inches respectively. In addition to these, two laterals were produced at the node below the dead tip; these measured five inches and three-and-a-quarter inches respectively. As in the case recorded above, the foliage of the scion remained normal. A lateral shoot from the stock (H. japonicus) arising immediately below the graft, attained a length of two feet six inches and succeeded in producing female flowers. Thickening of the scion (8 mm. diam.) above the graft union was again observed, the diameter of the stock remaining much the same as when originally cut (5 mm. diam.).

On three of the four plants of Humulus japonicus grafted with Tutsham scions, the scions persisted for two or three weeks, but eventually died before making growth. On the fourth plant, however, the scion remained green and healthy, and after three weeks it had reached a height of nine-and-a-half inches. Growth was very slow, and the scion on August 11 was only thirteen inches high, perhaps owing to the fact that a lateral shoot from the stock had been allowed to grow from a bud situated below the graft to a height of seven feet one inch.

As regards the two plants of a "wild" Hop grafted with scions of the Japanese Hop, on the first (with three scions) only one persisted, and made very weak growth; on the second plant, one scion failed but the other, nine-and-a-half inches high on June 25, reached a height of three feet nine inches by August 11 and bore a few female flowers. Three ungrafted stems of the stock plant were not much higher at this date and measured four feet.

These experiments show that it is possible to graft the annual species H. japonicus on the perennial species, H. Lupulus, and vice versâ. No interaction of stock and scion was observed.[*] It is possible that inter-specific grafting may prove of value in investigating further problems. The virus diseases of the Hop appear to be increasing in number. In England we have the mosaic disease, and almost certainly belonging to the same class, the "Nettlehead" disease; further, "Split-leaf" is possibly due to a virus. In Czecho-slovakia, Dr. Blattny has reported[†] five, or possibly six, distinct virus diseases. If any of these are caused by two or more viruses at work in the same plant, as has been found to be the case in Tobacco and Cucumber,[‡] H. japonicus may possibly prove to be of value as a differential host for separating the viruses.—*E. S. Salmon and W. M. Ware, South-Eastern Agricultural College, Wye, Kent.*

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[*] Salmon, E. S., and Ware, W. M.; Virus diseases and the grafting of the Hop. *Gard. Chron.*, LXXVII, 3rd. Ser., 320-322, May 9, 1925.

[†] Thrupp, T. C.; The Transmission of Mosaic Disease in Hops by Means of Grafting. *Ann. Appl. Biol.*, XIV, 175-180. 1927.

[‡] Salmon, E. S., and Ware, W. M.; Grafting Experiments with varieties of Hops resistant to the Hop Powdery Mildew, Sphaerotheca Humuli (DC.), Burr. *Ann. Appl. Biol.*, XIV., 276-289, 1927.

[‖] *Loc. cit.*

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[*] It may be noted here that different results are stated to have been obtained by M. L. Daniel (*Gard. Chron.*, XXXI, 422, 1897) in grafting the large annual Sunflower (Helianthus annuus) on Helianthus laetiflorus, and vice versâ. From the grafts made by him in 1896, he concluded that the direct influence of the stock and of the graft is reciprocal in Helianthus.

[†] Blattny, C.; Peronospora (Falscher Meltau) des Hopfens *Travaux des Instituts des recherches agronomiques de la République Tchécoslovaque*, Vol. 27A, Prag, 1927.

[‡] See Johnson, J.; The Classification of Plant Viruses. *Wisconsin Agric. Exper. Station Res. Bull*, 76, 1927.

NOTES FROM A WELSH GARDEN.

Among the more uncommon of the spring-flowering Berberises, B. Darwinii var. macrophylla is distinct and good enough to claim a place even among the most notable of its nearer allies. This is a robust shrub with large, deep-green leaves set rather closely on the branches. Its most unique feature, however, is the blossom, the flowers being produced singly instead of in racemes. These blooms, moreover, are considerably larger than those of the type. In fact, they are bigger than the blossoms of any of the more showy species, and measure fully half-an-inch across. Their colour is a warm orange-yellow, and they are unusually rich in their Cowslip fragrance.

Piptanthus nepalensis, a half-grown specimen on a north slope, is one of those reputedly tender shrubs which last winter's frosts might have been expected to destroy. But it was quite unharmed, and has been flowering abundantly since early April. Another attractive shrub in the woodland at this season (mid-May) is Halesia carolina, whose "Snowdrops," hanging in clusters from the joints of the older wood, are tinted with rosy-fawn. As Ceanothus rigidus—the earliest of its genus here—goes out of bloom, colouring the ground beneath it with the violet-blue litter of its amazing crop of fallen blossom, C. Veitchii comes into flower. If not quite so hardy as C. dentatus var. floribundus of the lists, this is, in my experience, a shrub of more elegant growth, and the clear blue trusses of blossom are somewhat larger than those of the other variety named.

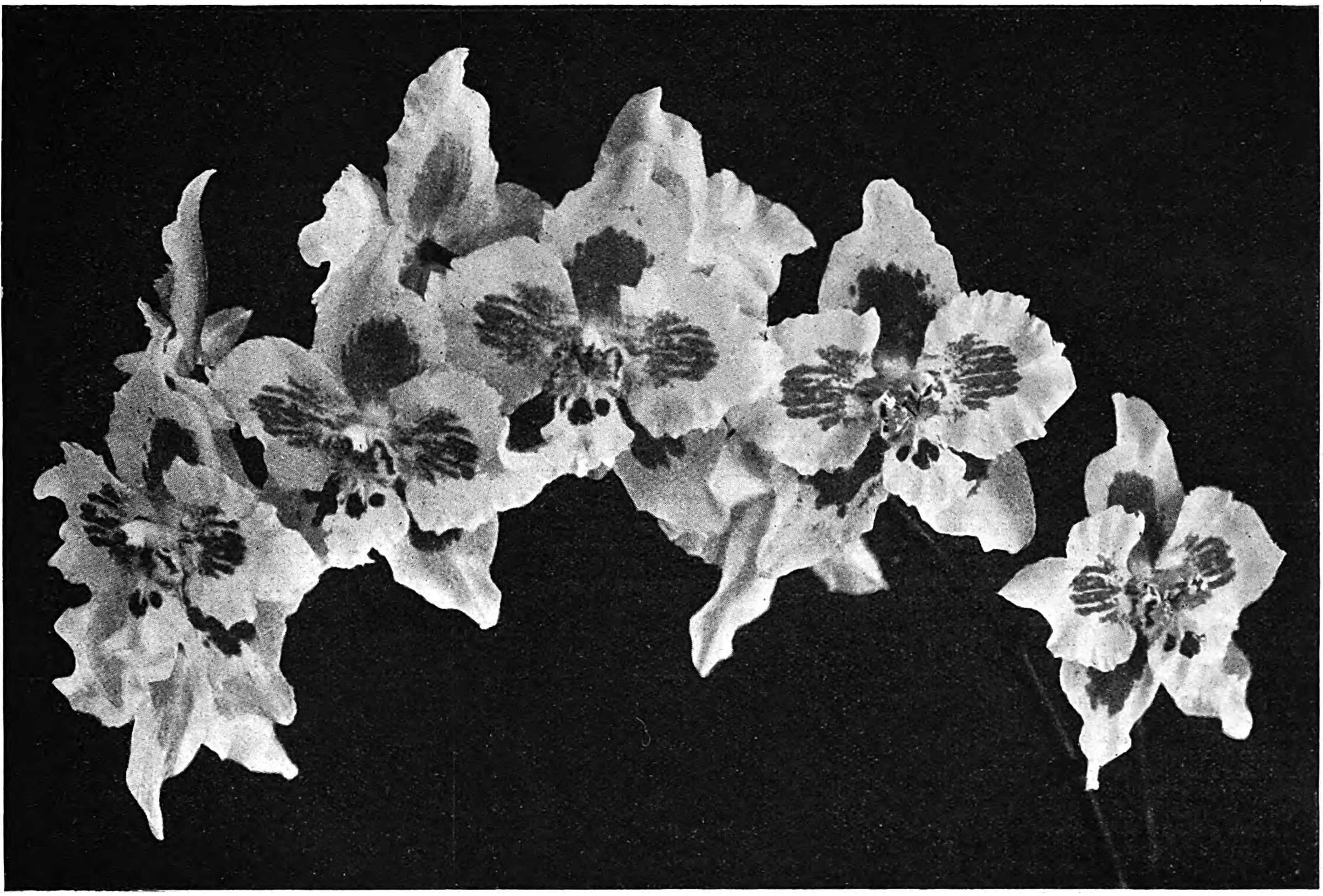

FIG. 185.—ODONTIODA MRS. R. F. FELTON.

R.H.S. First-Class Certificate, May 22. Flowers white, marked with red. Shown by Messrs. Armstrong and Brown.

In Ericaceous shrubs, Erica australis is unquestionably the finest of all the taller kinds. The brilliance of its rose-pink blossoms, their large size and the prolificacy with which they are yielded, together with the dark, glossy green foliage, give this superb Heath a place above all others of its season. Pieris formosa, a specimen eight feet high and six feet through, is another allied shrub which stands out as very superior to others of its genus, and one which might well claim to be ranked high in a short list of the best flowering shrubs of spring. Among smaller Ericaceous subjects, Leiophyllum buxifolium is always a great delight throughout April and May. It is an ideal dwarf shrub for associating with Heaths, Gaultherias and the like. Its glossy, dark green foliage, compact habit and the ruby buds which break into a galaxy of little crystal-white blossoms never fail to attract admiration. There are several forms of this comely little plant, including a trailing one.

Azalea ledifolia (Rhododendron ledifolium) is again sheeted with its large, pure white, sweetly-scented flowers. This is in every way a more charming subject than the double-flowered variety with rose-purple flowers. That delightful little shrub, not distantly related to the foregoing, R. indicum var. balsaminaeflorum (rosaeflorum) also invariably does well here. It makes a large mat of growths, and throughout the later spring bears a profusion of its double, salmon-red, Camellia-like blooms. In the cooler, but well-drained soil, nearer the water, Myrtus nummularia, a tiny creeping evergreen which has ignored 20° of frost, is now starred with its comparatively large white blooms. These are followed by big pink and white berries. Rubus arcticus, a cheerful little Raspberry of about four inches, with rosy flowers, also delights in the cool conditions which suit the above, but Veronica canescens, whose delicate blue has blended so happily for some years with the colour of the Rubus, seems to have disappeared.

Meconopsis horridula, and M. rigidiuscula (if the labels do not lie!) have both preceded M. Baileyi, their very lovely blossoms being a deep, lustrous azure. But even these charming subjects do not eclipse the fascinating grace and refinement of M. quintuplinervia whose large, lavender Poppies, swinging on eighteen-inch stems, are beyond praise. This excellent plant, moreover, is a true perennial, but I think it is the better for having the older clumps broken up and divided when growth begins in spring.

Geranium atlanticum was again the first of the Cranesbills to flower this season, its fine purple blooms being produced in bold clusters on rigid, nine-inch stalks. This was followed by G. rivulare, with white, purple-veined flowers and G. allionum (?). The latter is a plant with pale green, hairy, broadly-lobed leaves and sprawling, two-feet stems, which bear blossoms about one inch across, in a fresh clear pink, with lines of a darker shade. These, in the borders, were quickly succeeded by G. Farrerii, G. Pylzowianum, and the delightful G. subcaulescens in the rock garden. Among these is a charming Forget-me-not, Myosotis spatulata, from high altitudes in New Zealand, a hairy, almost prostrate little plant with milk-white, stemless flowers and dark green, oar-shaped leaves. This has proved quite hardy through a trying winter, but it is in rather dry, gritty soil. Armeria fasciculata, a Spanish species, with pale, silver-pink flower-heads on eight-inch stems, is keeping company with the lowly, rose-studded pads of A. alpina and A. caespitosa. Aethionema Warley Rose is as brilliant as ever in its incomparable pink, whilst among the earlier Veronicas one cannot overlook the quiet beauty of V. Teucrium dubia var. rosea and the wonderfully vivid blue of the wee alpina form of the same species.

On a dry, stony ledge where few plants will flourish, Primula Forrestii has been flowering for fully two months. Under the same conditions Sedum Palmeri is doing better than usual. Its broad heads of orange blossoms having delayed their coming by several weeks, are enjoying more agreeable weather. Potentilla mandshurica, a lowly, prostrate shrublet with white flowers is also among those lovers of sun and stony places; nor may one omit to note that elegant native species, P. rupestris and its very dwarf form, P. r. var. pygmae. Each of the white-flowered Potentillas are first-rate rock plants in their own way, the one being tall and stately, the other a shy, diminutive variety of an inch or two for a specially close up position. They are good subjects for dry, poor soils, lime-lovers, and quite hardy. Under similar conditions, the very dwarf, silvery-grey Alyssum atlanticum, its prostrate growths terminating in upturned crowns of lemon-yellow, wintered well and promises a long season of colour.

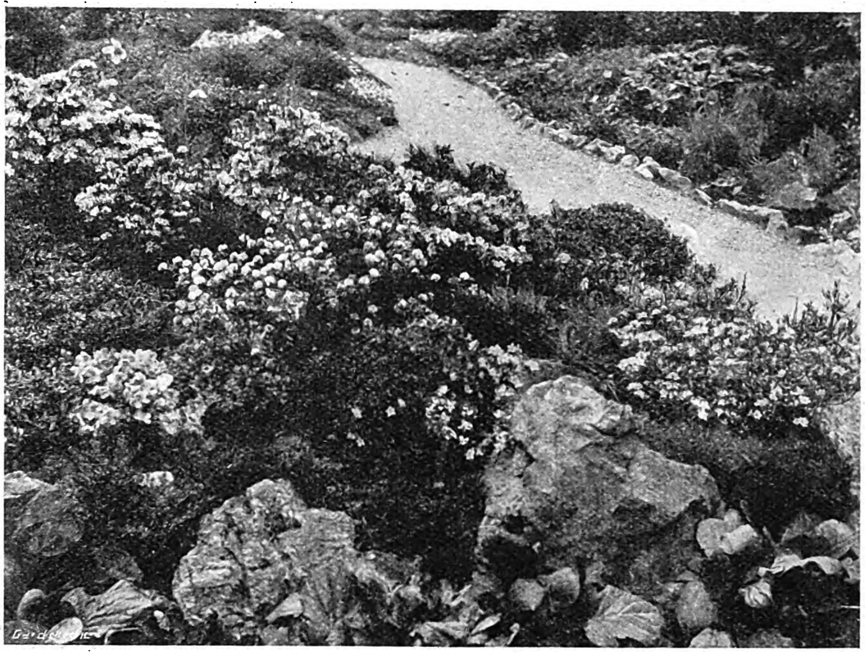

FIG. 186.—KURUME AZALEAS, RHODODENDRON LEDOIDES AND R. CALOSTROTUM AT GLASNEVIN.

Erysimum linifolium is such an excellent rock and wall plant that its almost entire extinction by the frost—for the first time in my experience here—is a real loss. Its blue-lavender blossoms always blended so happily with the flowers of spring, especially with the citron yellows of some of its alpine allies and that very distinct and striking hybrid, Cheiranthus Moonlight.

Notable among dwarf-flowering rock shrubs, in addition to the Potentilla mentioned, is P. Veitchii, also with white flowers. This admirable plant, one of the many forms of P. fruticosa, does not look like exceeding two feet in dry, stony soil. It is extraordinarily prolific of bloom, and its flowers are above the average in size. Helianthemum umbellatum, most precocious and reliable of its race, has been sheeted with blossom since mid-April. It was soon followed by the elegant H. Libanotis, one of the best of the yellow selfs, while a form of H. vulgare (Chamaecistus), with rich, wine-crimson flowers still holds its own among many rivals. Cistus Clusii has again been the first of its genus to bloom, an admirable little shrub which will maintain a succession of its small white flowers throughout the season. *A. T. Johnson, Ro Wen, Conway, North Wales.*

NOTES FROM GLASNEVIN.

The phenomenally cold weather during April and the first half of May had a disastrous effect on the flowering of many early shrubs. Its effects were particularly cruel on many of the newer Rhododendrons, and it annually becomes more obvious that the process of elimination among the new species is likely to be severe. In some cases the plants are killed through splitting of the bark, in other cases the young growths are cut back annually so that the plants are gnarled and stunted, rendering them useless for ornament or scientific study. Species of the type of R. sino-grande and R. giganteum appear hopeless, and even R. decorum is sadly crippled. Some of the useful species so far as Glasnevin is concerned, are found in the sub-series Triflorum and include R. Augustinii, R. charianthum, R. chartophyllum, R. Davidsonianum, R. Searsiae and R. yunnanense, all of which are flowering freely, although they have lost rather more leaves than usual.

In the Azalea series, R. occidentale is a mass of sweetly-scented, pale yellow flowers, reminiscent of Honeysuckle, and in the sub-series obtusum the Kurume Azaleas (Fig. 186), R. obtusum japonicum, are now making a very fine display. Associated with them, R. ledoides of the Cephalanthum series is very charming with its many clusters of small, pink-tinted, Daphne-like flowers; it will be followed in a few days by R. sphaeranthum, a closely allied species, with white flowers. Along with the above, R. calostrotum and R. keleticum of the Saluenense series are flowering freely, although one or two plants of the former, more precocious than others, had their flower buds destroyed.

Reverting to the Azalea series, two useful plants are found in R. indicum Kaempferi, bearing a wealth of salmon-red flowers, and R. yedoense var. poukhanense, the Korean Azalea, with flowers of an uncommon lilac colour. These comprise the more striking and apparently more useful species and varieties in flower at present, but where display is the chief object, it is unlikely that many of the fine garden hybrids will be displaced. One old plant of Ascot Brilliant, growing on the top of a bank in about nine inches of "made up" soil, is a glorious mass of blood-red trusses every year, and hybrids of very different origin, Loderi, Patience and Pretty Polly, are just opening their trusses of large, white flowers, which are pink in the bud stage.

The evergreen Ceanothuses are always admired when flowering well, but they do not always escape the vagaries of our uncertain climate. Nevertheless, C. rigidus has seldom flowered more freely, and although the colour is not so good as in C. Veitchianus, for instance, it is yet blue enough to be striking, more especially as it flowers in advance of the others, and at a time when blue-flowered shrubs are scarce. There are two forms here, one called the Warley variety, with somewhat less-toothed leaves; this may be the form referred to by Mr. Bean as "Nuttall's type." Although probably best grown against a wall in most districts, here both grow and flower well in an open shrubbery where they suffer occasionally from wind.

The Brooms (Cytisus) are now a feature of the grounds, more particularly C. scoparius, with its varieties and hybrids. C. albus, the White Broom, is capable of making a very fine display when bushy young plants are maintained, and particularly worthy of notice is Tombe's variety with pink-tinted flowers; this I take to be an improved form of the shrub occasionally met with as C. albus incarnatus.

Among the many Pyruses which have flowered recently, none is more pleasing that Pyrus Sargenti, trained to a single stem and forming a small tree, every branch densely furnished with corymbs of white flowers. This species gives the impression that it should be grown as a bush, as described and illustrated by Mr. E. H. Wilson in *America's Greatest Garden*. Although it fruits freely as a rule, we have so far failed to germinate a single seed.

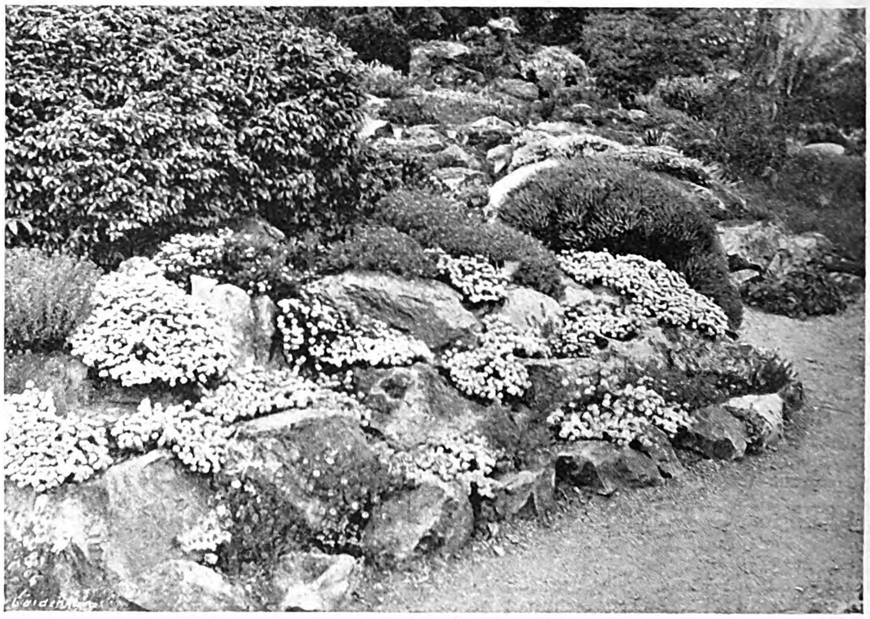

FIG. 187.—AETHIONEMAS AT GLASNEVIN.

Heaths of many kinds have done good service since December, but the outstanding species at the moment is Erica australis; one old bush transplanted a year or two ago from a garden on the south side of Dublin is now flowering with great freedom in a bed of Rhododendrons. The white variety called Mr. Robert has not yet made much show, but our plants are small.

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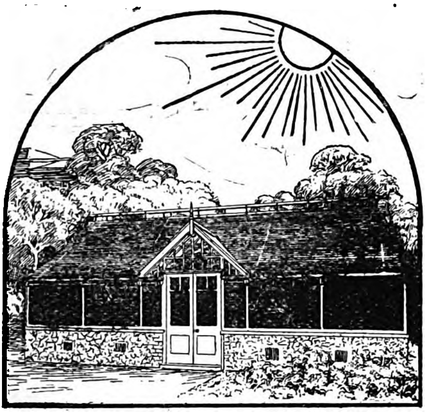

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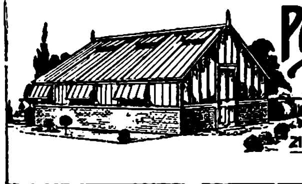

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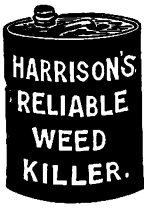

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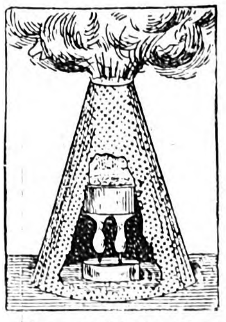

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The rock garden, as is to be expected at this season, is now very gay and interesting. One rocky bank in full sun is wholly planted with Aethionemas (Fig. 187), including A. armenum, A. coridifolium, A. pulchellum, A. schistosum, A. grandiflorum and A. iberideum, all in full flower except A. grandiflorum, which is just in bud, and A. iberideum which is over. The display of colour is remarkable, and the growing together of as many species as possible is useful to visitors.

Already the blue flowers of Meconopsis Baileyi are attracting attention. Captain Kingdon Ward's No. 5,784, planted out last year, is flowering before two-year-old clumps now pushing up their spikes for the second time. Many of the dwarfer Meconopsis are planted between the Kurume Azaleas and seem to like the conditions.

Another plant of Ward's collecting is flowering here for the first time, namely Primula melanodonta (K.W. 6,901), a pretty species producing its flower-stem bearing three or four somewhat nodding flowers of rich yellow, from among a rosette of leaves which remain flat on the soil. It is planted at the edge of a small bog in peaty, but not unduly wet soil.

In the bog garden many of the larger-growing Primulas are now prominent, particularly P. japonica and its varieties, and I doubt if a more useful species of this class exists among newer introductions. P. pulverulenta is a good plant, but the colour and substance of the flower are inferior to those of P. japonica. P. Florindae, judging by its developing leaves, is full of promise, and there is much to look forward to in many of the later-flowering species.

The most noteworthy plant in the bog at present is the white-spathed Lysichitum camtschatcense album, pushing up its spathes now, long after the typical yellow-spathed form is over. Both are striking plants, perfectly hardy, developing large, tropical looking leaves in autumn. *J. W. Besant.*

GARDEN MANURES FOR JUNE.

GUANO, once Peru's principal export, has dwindled to negligible significance as an item of international trade. The severe damage sustained by the "rookeries" as a result of abnormal climatic conditions in 1925 has not been entirely repaired, so that after the needs of the local Sugar and Cotton estates have been provided for there is only a very limited quantity of the fertiliser available for export. In bygone days, Peruvian guano was a manure in great demand as a top-dressing for growing crops, and its relatively high nitrogen and phosphorous content, together with its ease of application, made it a very useful fertiliser. The fact that it is not now so freely available as it was a few decades ago suggests that its place might be more largely filled by making more use of poultry manure in this country. A highly nitrogenous manure, yet at the same time of moderate bulk, it should be collected regularly and used systematically as a producer of crops.

In this direction, an interesting side-light on the value of poultry manure, and incidentally its possible variability as a fertiliser, is shown as a result of some recent experiments in relation to the utilisation of various calcium compounds by hens in the production of eggs. Calcium was given to the hens in the forms of calcium carbonate, calcium lactate, calcium chloride, calcium sulphate and tricalcium phosphate, the experiment being not so much to assist the formation of egg-shell as to increase the actual egg content. It was ascertained that hens supplied freely with a high-grade, crushed limestone (ninety-six per cent. calcium carbonate), consumed regularly at the rate of 8·7 grms. per hen per day. When this was changed to powdered rock gypsum (ninety-four per cent. calcium sulphate) the consumption was at the rate of 6·3 grms. per hen per day. That egg-production was considerably increased under these added lime rations was clearly shown, but the highly interesting result from the manure point of view was that an examination of the droppings of the hens showed that large quantities of limestone and gypsum were being passed through the birds unchanged. If poultry-keepers find that the addition of calcium compounds to the rations is a profitable investment from the egg production point of view, it might also add to the value of their by-product, the manure. On many soils the calcium content of the manure would be an added advantage and help to maintain their phosphate value balance, while generally it should facilitate the storage and final distribution of the manure.

The tendency to-day is to use fertilisers of high concentration, probably because these are considered more economical. That this leads to important reductions in cost of handling and transport is obvious, but on the other hand it materially alters customary ideas of application, and special study should be given to quantities applied and measures taken for uniformity of application. As regards the nutrition of the plant, the problem the grower has to consider is the supply of compounds containing nitrogen, phosphorous and potash in a form available to plants, and with low concentration grades it should be remembered that the material of small or no fertilising value costs as much to handle and transport as that of high concentration which may double the result, weight for weight. Exact and uniform distribution of small quantities is not easy, therefore special care should be given to highly concentrated fertilisers.

Whereas until quite recently nitrogenous fertilisers containing from twenty per cent. to twenty-five per cent. of nitrogen were considered high, there are now many with a much higher percentage. Urea, with forty-six per cent, and ammonium nitrate with thirty per cent, both obtained from atmospheric nitrogen, are two of recent introduction which serve special purposes in intensive cultivation. The chemical manure industry is also undergoing many changes in other directions. Phosphoric acid is being prepared from mineral phosphates without the aid of sulphuric acid, yielding a product containing fifty-four per cent. phosphate and twenty-one per cent. nitrogen. The potash of potassic salts is also being brought into combination with nitric or phosphoric acid to produce compounds containing a very high percentage of plant foods, and thus a range of complete fertilisers of exceptionally high analyses is being manufactured.

Amongst newly introduced fertilisers of considerable promise, nitro-chalk may be mentioned. It is a compound of ammonium nitrate and carbonate of lime containing ten per cent. nitrogen, half of which occurs as nitrate and half as ammonia. It is thus very valuable as a quick-acting manure, the nitrogen present in the form of nitrate being immediately available, while that present in the form of ammonia sustains the feeding value over a longer period. On soils inclined to be difficult in lime, it would be of special value, and it helps to preserve the lime content of normal soils. *W. Auton.*

NOTE ON APPLE CAPSIDS.

DURING the latter part of April and the first week of May, the habits of the fruit tree red spider have been followed closely in the field in the neighbourhood of East Malling.

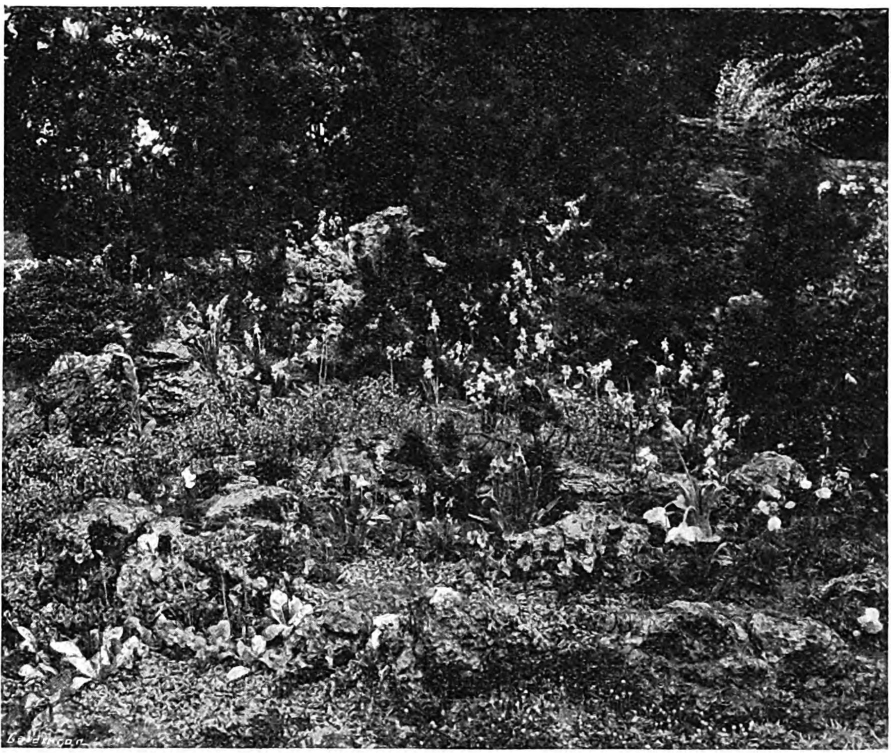

FIG. 188.—CHELSEA SHOW: PART OF MR. CLARENCE ELLIOTT'S ROCK GARDEN.
Awarded a Silver Cup (see p. 379).

For this purpose a number of fruit farms were visited in the districts of Swanley and Maidstone, and in order to obtain data upon the hatching period of the red spider eggs in different localities, it has been necessary to examine individual trees minutely in the plantations.

Whilst these examinations were being made, considerable numbers of Apple capsid (Plesiocoris rugicollis) came under observation upon the trees, and since this pest is now becoming of such great importance, a few facts as to its habits in this locality appear worth recording, for comparison with the observations of other workers.

The first, second and third stage nymphs of Plesiocoris rugicollis were first seen in the field on April 13. It is evident, therefore, that hatching commenced a good deal earlier than April 13 in some plantations.

On April 23, a large number of capsids were actually observed hatching out from their eggs. These observations were made in a plantation at Swanley. The trees had previously been sprayed twice (during the winter of 1927-8) with a tar-distillate wash. Since that date further observations of hatching have been made, from time to time, and capsids have been seen to emerge from their eggs right up to the time of writing (May 4). It is evident that hatching has not finished in the Swanley district, since many unhatched eggs are to be found on the shoots of Apples.

When the young capsid freed itself from the egg, it was observed to remain near the empty egg-case for about fifteen minutes before becoming active. In every case the head end of the bug came out of the egg first.

It is interesting to note that hatching is still taking place on Worcester Pearmain, whilst the trees are in full blossom.

An important point in connection with the life cycle of this capsid has been noted at Swanley. It is considered by some authorities that the eggs are laid mainly in the tissue of the new growth. At Swanley, however, this does not appear to be the case, for eggs have been laid in large numbers on the main stems and in the spur wood of bush Apple trees. Eggs were not uncommonly found in seven and eight-year-old wood and in several instances, capsids were noted hatching from wood of nine inches diameter.

It appears, therefore, that the life cycle of the capsid may vary considerably in different districts, and it would be interesting to know whether other workers have made observations similar to those here recorded. *A. M. Massee, East Malling Research Station, Kent.*

NOTICE OF BOOK.

Lilies and their Culture in North America.*

As a book for the cultivation of Lilies in a large or small way, this should take high rank. The author has spent practically a life-time in growing Lilies and other plants on a large private estate at Weymouth, Massachussets, and more recently as a commercial specialist. He made many experiments in all that pertains to Lilies, and although his efforts were devoted to growing them in North America, many of his hints, and experiences might be turned to practical account in this country, in the use of soils, manures, mulching, planting, and time for planting.

All Lilies, he states, like leaf-mould, and if he had to choose between peat and loam, he would prefer the latter. Heavy soils may be made suitable by means of sharp sand, fine gravel and leaf-mould. For most species out-of-doors he would prefer a medium heavy loam, inclined to be gritty, with good drainage. Even Lilium Brownii, L. Leichtlinii and L. auratum seem to prefer loam. Fresh farmyard manure would be distinctly harmful to Lilies, although well-rotted and crumbly manure shows good results, both with seedlings and full-sized bulbs. Top-dressings of this old material are highly beneficial, and, preferably, should be used after the ground has been frozen hard. This prevents alternate freezing and thawing, keeps water from the bulbs, and prevents mice from digging down to the bulbs during the winter and eating them. Liquid manure, like the solid, should be used in moderation, and the former should be used only during the growing period. Some, at least, are benefited by the use of bone-meal, and a good many species may be grown in limed soil, while the swamp Lilies and a few others prefer an acid soil. Chemical fertilisers should be avoided. Some of the warmer States of America depend on hoeing, or cultivating, and thus securing a mulch of dust, rather than the usual mulching materials. While admitting that the flowers last longer in Britain, the bulbs grown in America are larger and finer.

For permanent planting in borders, he recommends the bulbs to be planted eight inches to twelve inches deep, in the case of stem-rooting Lilies, and four inches to five inches for those that do not root from the stems. In very heavy soils the bulbs should be planted one-third more shallowly. Replanting should be done so soon as possible after the tops wither, while storing should be avoided as much as possible. The soil should be deeply prepared, some sand placed below and above the bulbs, the close-scaled bulbs set vertically, and the open-scaled ones, like the swamp Lilies (L. superbum, etc.), laid on their sides, so that moisture may not lie beneath the scales. Shade from the mid-day sun is conducive to the durability of the flowers.

In the case of the disease of L. candidum, prevention is secured by spraying weekly from spring until the plants are about to bloom. Importations of Lily bulbs from Japan should be dipped in a solution of carbolic acid before shipment, and immediately on arrival, if the bulbs do not look clean and fresh. The raising of Lilies from seeds, bulbils, offsets and scales is fully discussed. A large number of species may be cultivated in pots, and the special treatment for each is given. The bulbs should be repotted, roots and all, as the tops are dying away.

A long article at the end of the book, entitled, "Notes on Varieties," deals with most of the species in cultivation, and their requirements, as well as giving interesting gossip about former and modern cultivators in this country. The author has seen Lilies growing in several parts of Britain. The book contains thirty-six good photographic illustrations of Lilies, is well printed in large type, and well edited.

FRUIT GARDEN.

THE FAILURE OF THE STRAWBERRY.

WHAT has happened in many gardens all over the country has been described by the various writers in *The Gardeners' Chroncile*. Strawberries, with very few exceptions, are in an unhealthy state, and this condition is manifesting itself in many forms. These are carefully set out on p. 243. In addition, leaf-spot and mildew have been common, although the latter is generally most prevalent in dry seasons.

Most gardeners will probably have read the summary of Dr. Claude Wardlaw's conclusions on the matter (p. 268) with interest, although there are some points on which they might hold an opposite opinion. For instance, farmyard manure and labour are both scarce, and it is quite possible that cultivation is not so good in market gardens as formerly, but there are many private gardens where the failure of the Strawberry cannot be attributed to these causes.

As to the need for better varieties, the splendid exhibits of Messrs. Laxton Brothers at the various leading shows would lead one to suppose there are plenty to choose from.

It is indeed a step forward that the disease is at last "definitely diagnosed as a root disease, due to the destruction of the root system by soil fungi under soil conditions unfavourable to the plant, and it is pointed out that the disease is worst when the drainage is bad." In relation to this question of drainage, there is a general concensus of opinion among leading gardeners that the waterlogged condition during the past wet, sunless summers, even in well-drained kitchen gardens, has much to do with the failure of the Strawberry.

Again, as to "the difficulty which the Strawberry plant encounters in rooting into the stiff soils of portions of the Clyde Valley fruit fields" and "the poor and scanty root system produced when the Strawberry roots into a soil where the tilth is poor and the texture close and compact" —is not this difficulty and the paucity of root-system symptomatic of the diseased condition and not of the healthy Strawberry plant we all remember years ago? Many experienced gardeners will agree when I state that Royal Sovereign, for many years after it was introduced, found no difficulty in forming a vigorous root-system even in the Sussex clay.

Gardeners in the south would be glad to be able to follow the recommendation "to plant the Strawberries the first year and crop them the second to the *fifth* year (the italics are mine). What prevents them doing so is well stated by *M.B.* (p. 161), who wrote "Plants that are put out one foot apart each way do not meet the first year, and after that there are no plants to meet!"

In this garden we fared as badly as our neighbours, in fact, worse than some of them. New beds were formed each year to obtain a few fruits for dessert, and that with difficulty. King George and The Duke were purchased to provide new stock, but with little benefit. In 1926, I obtained some healthy plants from a friend and planted them out in an enclosed portion of an adjacent field. Some disease was visible during the summer, and we commenced to spray regularly with Strawsonite. Layers were taken early and a new bed planted in August. As I was by no means sure how the new bed would yield, the old bed in the kitchen garden was retained, and after the straw, etc., was removed, all the worst plants were destroyed, the sites opened out and thoroughly limed. In August, all vacancies were made good with surplus plants of the new stock, the whole bed being sprayed regularly as new leaves formed.

There was soon an unexpected but visible improvement in the diseased plants, and this has continued up to the present; the flower stalks and petioles of the leaves are lengthening in a normal manner, and the leaves have a healthy appearance. A good tilth has been maintained since the runners and straw were removed, but that is our regular procedure. The new bed is healthy which, of course, might be due to cleaner stock and new ground; but the recovery of the older, diseased plants in infected ground, can only be due to the preservation of the leaves by spraying. We all know that foliage governs root action, and so it would seem in this case.

I do not put this forward as an undoubted cure for Strawberry troubles; it has yet to be proved, but the results have been so satisfactory that the facts are merely recorded in the hope of helping others. *J. Comber, Nymans Gardens.*

HOME CORRESPONDENCE.

The Primula Conference.—The Primula Conference has come and gone. Shades of Balfour and Farrer—What a Conference! That the literary grace and scientific exposition of 1913, should in 1928 give place to the banalities of the class-room! The morning session was a disgrace to the R.H.S a scandalous waste of time for busy men and an insult to common intelligence. Genetics may be a fascinating subject but they were not germane to this Conference. It is whispered there were quarrels in high places; if this be so, the matter should be ventilated thoroughly and at once, and the culprits exposed. I trust some abler pen than mine has already entered the lists, but if not, in the name of the wonderful genus, which is probably on the eve of developments almost unparalleled in horticultural history, and in the name of the beautiful goddess Primula, I hope they will do so without fear or favour. *R. J. Gummer, Clonlee, New Barnet.*

Award to Pyrus Malus Russell's Weeper.—Mr. Vicary Gibbs' note (p. 360) furnishes the explanation. His weeping Apple may be identical with Russell's Weeper, but does not agree with L. Späths' description of Excellenz Thiel ("beautiful soft pink flowers with deep red buds"). This description fits my plant. However, the Floral Committee "B" has asked Mr. Russell to show his weeper again next year, and I will show Louis Späth's Excellenz Thiel. Room may be found for another Weeping Apple, namely Oekonomierat Echtermeyer; the leaves of this variety approach bronze; the flowers are carmine-purple, and the buds blood-red. *William Lawrence.*

NEW PLANT REGISTERED.

THE International Bureau of Registration of Novelties registered on April 13, 1928, a seedling from Acacia dealbata named *Acacia dealbata coerulea compacta*. The seedling was raised in 1922, and has bluish foliage, is strong, free-flowering and early, and has golden-yellow flowers. It received a First Class Award from the French National Horticultural Society on February 23, 1928, and is being distributed by the raisers, M. Jules Douillard, Nantes.

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* *Lilies and their Culture in North America.* By William N. Craig. Chicago: Florists' Publishing Company. Price $3,00 post paid.

SOCIETIES.

CHELSEA SHOW.

(*Concluded from p.* 384).

Orchids.

First Class Certificate.

Odontioda Murillo var. The Duchess.—This brilliant variety obtained a First Class Certificate and not an Award of Merit, as stated on p. 374. Moreover, we learn that it was exhibited by Mrs. Paterson.

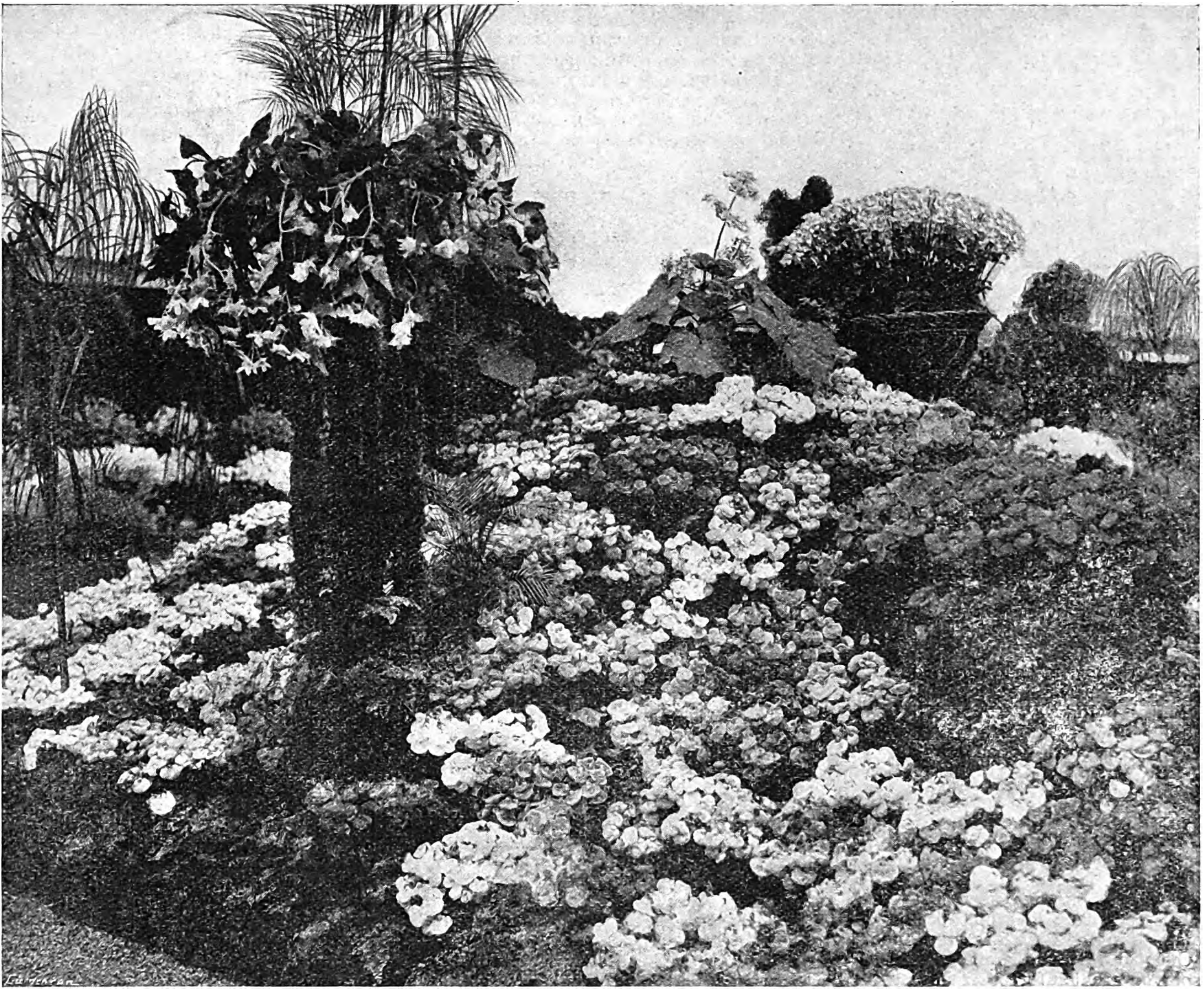

FIG. 189.—CHELSEA SHOW: A PART OF MESSRS. SUTTON AND SONS' GROUP OF GREENHOUSE PLANTS.

Awarded a Gold Medal. (see p. 377).

Award of Merit.

Odontoglossum Camilla var. Empress.—A particularly large-flowered and handsome Orchid of fine form and rich colour. Shown by Robert Paterson, Esq., Stonehurst, Ardingly.

Groups.

Messrs. Mansell and Hatcher, Rawdon, Yorks., put up a fine group of Odontoglossums, Odontiodas and other attractive Orchids, but the stormy weather acting upon the end of the tent more than once disarranged their display while it was in the making. Nevertheless, they had a bright exhibit of well-grown plants of Odontoglossum amabile, O. Osmonde, O. Philomene, O. Camilla, Odontioda Brewii, O. Bradshawiae and O. Chanticler. Burrageara Windsor was very well shown, and so was Brasso-Cattleya Heatoniensis, Laelio-Cattleya G. S. Ball and Lycaste aromatica, while Miltonias were displayed freely and in fine condition. These latter included varieties of M. vexillaria, M. Bleuana, M. Lyoth, M. William Pitt and M. Memoria G. D. Owen.

Roses.

This year, at Chelsea, the groups of Roses were confined to a special tent, but the arrangement did not appeal to us as highly satisfactory. The tent was naturally much smaller than those in which the vast majority of plants were displayed and there was an atmosphere of dwarfness about the display; they seemed to be huddled around the sides of the tent and the bare centre, useful from a view point, did not improve the general effect, or do justice to the efforts of the exhibitors, which in some instances were very fine.

Messrs. Walter Easlea and Sons, Ltd., arranged an attractive bank of blooms with a special feature of the new Rambler Rose Thelma, with masses of clusters of large, delicate, coral-pink flowers. Amami, a new Hybrid Tea, was also well shown, its large, Peach-coloured blooms being in splendid condition, and Thora was also noteworthy. The climbing Wichuraiana Achievement, with variegated foliage and small pink flowers, fading to white, attracted much attention, as also did the new Marianne Kluis, with double scarlet blooms. Mabel Morse, Charles P. Kilham, Florence L. Izzard and Mrs. G. Heath were shown in good quality, and at each end of the display were fine weeping standards of Paul's Scarlet Climber.

Messrs. W. Cutbush and Son arranged their Roses in an original manner. There was a background of Acers with variegated foliage, and the Roses, chiefly of the dwarf Polyantha type, were arranged in individual beds. All were heavily laden with blooms, and the most striking were Ellen Poulsen, with large, rich rose-pink flowers; Locarno, a vivid red; Kersbergen, rich crimson; Mrs. Anna Huding, flaming scarlet; Sunshine, a new seedling with orange-yellow blooms, and Mary Casant, a lovely salmon-pink colour. Golden Salmon was included, and other Roses of merit were Rudolph Kluis and Greta Kluis.

Mr. J. H. Pemberton's exhibit, although rather limited in size, contained several choice dwarf and climbing Polyantha sorts. Havering Rambler, with large clusters of Almond-pink blooms; White Rambler, Sander's White, and Petit Louise, with rosy-pink flowers, formed a fine background to the buff-coloured Gruss an Aachen, White Ellen Poulsen, Kersbergen, Locarno and Lady Reading.

The Roses shown by Messrs. E. Paul and Co. were lovely specimen blooms, arranged in vases in a large bank. Golden Ophelia, the popular Richmond, Rev. F. Page Roberts, a fine large yellow sort; the beautiful Ophelia, Mrs. Aaron Ward, and Madame A. Chatenay, were a few of the choicest. Other good varieties were Los Angeles, with deep coral-pink flowers, shaded orange; W. F. Dreer, deep golden yellow flushed with rose; Florence L. Izzard, rich yellow; Madame Butterfly and Hoosier Beauty.

Messrs. Benjamin R. Cant and Sons, Ltd., showed their Roses in a massive bank, with a background of rambler sorts. There were large well-flowered bushes of Hilda, a fine seedling with well-shaped blooms, the petals being reddish-pink, paler on the reverse; and other notable sorts were Columbia, Rev. F. Page Roberts, and Cecil, gold in bud and opening deep yellow. The beautiful Phoebe was well shown, and others which commanded attention were Betty Uprichard, Diana Cant, a lovely carmine-red, flushed orange-scarlet; and Lady Roundway; Lady Forteviot was undoubtedly one of the most striking.

A wonderful display, with a background of such climbing varieties as Lady Godiva, Paul's Scarlet Climber and Hiawatha, was set up by Messrs Chaplin Brothers, Ltd. There were circular groups of standards, including such sorts as Mabel Morse, Mrs. Tresham Gilby, Mrs. Henry Bowles and Golden Emblem, while the pillars of Madame Butterfly, Roselandia and William Bower, produced a pleasing effect. The groundwork of this group contained a mass of the dwarf Polyantha Golden Salmon; also Superba, Scarlet Leader, Locarno and Echo; there was a central mass of Chaplin's Pink Climber, and good specimens of Gruss an Aachen, Fascination and Elsie Poulsen.

Mr. George Prince's exhibit lacked colour, but there were good examples of such dwarf Polyantha varieties as Mrs. Cutbush, bright pink; Locarno, Orange King, with neat, double orange-scarlet blooms, and Coral Cluster, rich coral-pink. There were also good blooms of Madame Butterfly, Golden Ophelia and Mabel Morse.

A bed of the new Rose Magnifique, a dwarf Polyantha variety of distinct merit, with deep rose-pink blooms, was shown by Messrs. Sliedricht and Co.; they also displayed Gloria Mundi, a fine sort with large compact clusters of vivid geranium-scarlet blooms.

Roses of various types were staged in numbers by Mr. Elisha J. Hicks. Of Hybrid Teas there were good blooms of Betty Uprichard, Clovelly, Ophelia and The General; Souvenir de Claudius Pernet was well shown, and the dwarf Polyantha Orange King was very striking, other sorts of this type being Frank Leddy, Mary Cassant and Golden Salmon. There were also fine weeping standards of Excelsior, Lady Gay, Shalimar and Nanette.

A large corner group of great variety was set up by Messrs. Frank Cant and Co., Ltd. In the background there were fine pillars of Minnehaha, Excelsa and others, and there were also several well-flowered weeping standards of Excelsa. Standard specimens occupied a large portion of the exhibit, the varieties shown as such being Lady Roundway, Golden Gleam, Hortulanus Budde, Victor Teschendorff, Lady Inchiquin, Rev. F. Page Roberts, Golden Emblem and Autocrat; in the front were bushes of such lovely sorts as Locarno, White Ensign, Orange Perfection and Mrs. Anthony Kluis.

Miscellaneous Plants.

Mr. H. J. Jones set up one of his superb groups of Hydrangea Hortensia which occupied a considerable space in the first large marquee. When paying their visit to the show, the King and Queen displayed great interest in this magnificent exhibit, and also in Mr. Jones himself. Their Majesties were greatly interested in the two beautiful pink varieties which had been named after them, and the Queen then drew especial attention to a very large head of beautiful, soft pink flowers, and on being told that it was as yet unnamed, suggested Princess Elizabeth as a name. Prominence was also given in the group to the variety Lord Lambourne, of rich pink colouring, and there were also many very good blues and white varieties.

A large collection of Caladiums, attractively associated with Lilium longiflorum, Codiaeums (Crotons), Dracaenas, Gloxinias, Streptocarpus and blue Petunias, was arranged by Messrs. John Peed and Sons. The many Caladiums illustrated first-rate cultivation, and the chief varieties were Red Ensign, Racine, Marie Moir, Mrs. H. Cole, Mrs. H. Veitch and Willy Rappard.

An effective display was made by Messrs. Daniels Bros., with exceptionally large plants of their Schizanthus Excelsior hybrids, bearing myriads of unusually large flowers of great grace and beauty. With the Schizanthus were grouped a large quantity of Aquilegia Daniels' Long-spurred Hybrids of elegant and admirable type.

Rhododendrons and Azaleas.

Nearly all the exhibits of Rhododendrons and Azaleas were arranged under canvas, although there were two collections out-of-doors. These were a splendidly arranged group of Azaleas by Messrs. R. and G. Cuthbert, and a smaller group from Messrs. M. Koster and Sons at one end of the rock gardens. In the group of the former, at the end of the Elm Avenue, there were masses of glowing colours of many hybrids, chiefly of Azalea rustica and the Ghent varieties. Their Kurume Azalea hybrids also gave great charm of varied colours. Associated with these Azaleas were graceful standard Brooms, well-coloured Japanese Maples and pink Hydrangeas.

In the tents, Messrs. Wallace and Co. had a good bed of Rhododendrons which included Britannia, red; Mrs. George Paul, blush; Mrs. Lindsay Smith, white with green spotting; Pink Pearl, White Pearl, Robert A. Wallace, pink; Hugo de Vries, pale pink; Duchess of York, pale pink, with deeper margins; and Madame de Briun, bright red.

In a large corner space, Messrs. Waterer, Sons and Crisp had a magnificent group of Rhododendrons. The finest varieties were Mother of Pearl, of delightful colouring; Niobe, a large pink truss; Starfish, soft pink with crimson spots; Doncaster, of vivid rose colour; Pink Pearl, Philip Waterer, Armistice Day, blood-red; Bagshot Wonder, crimson; Corona and Mrs. E. C. Stirling. A large collection of deciduous Azaleas, arranged by Messrs. R. and G. Cuthbert at the other side of the tent, also provided brilliant colouring. As in their outdoor exhibit, the A. rustica hybrids and varieties were very prominent, and there were also especially good Mollis × sinensis varieties; the Ghent variety Cardinal was of very vivid colouring.

A particularly well-arranged group was set up by Messrs. R. Gill and Son, and this included a number of rare species as well as many of the type which succeeds so well in the warmer districts. The principal sorts were Norman Gill, pale blush; Pink Pearl, of unusually rich colouring; Mrs. Lindsay Smith, a splendid white; various Kewensis hybrids; R. fragrantissima cut from the open; and R. Aucklandii. Although not in flower, a branch of R. sino-grande illustrated the grandeur of its immense, shining leaves. With these were included a tall plant of Musa japonica, sprays of Embothrium coccineum, Thermopsis laburnifolia, Solanum aviculare, Enkianthus cernuus rubens, Clianthus punicieus and Calceolaria violacea. At each end of the exhibit there was a splendid plant of Beschorneria yuccoides. With their exhibit, Messrs. R. Gill and Sons, showed also, from Lord St. Leven, an inflorescence of Echium pinnatum, almost twenty feet in height, which was grown out-of-doors on St. Michael's Mount.

An effective corner group of Rhododendrons and a few Japanese Maples was arranged by Mr. F. Street. The chief Rhododendrons were Bagshot Ruby, Maxwell T. Masters, of deep rose colour, Lady C. Walsh, white, tinted with pink, Pink Beauty, Bernard Crisp, a large truss of pale pink; Cynthia, deep rose, and Pink Pearl. Messrs. M. Koster and Sons showed good standard and bush Rhododendrons.

In a central group, Mr. W. C. Slocock displayed many good Rhododendrons in a natural manner. His chief varieties were J. N. Van Nes, Dawn, Professor H. de Vries, Prometheus, Peter Koster, White Pearl, Starfish, Loder's White, Doncaster and Goldsworth Yellow.

Messrs. R. Neal and Son exhibited, on a ground space, a good group of Azaleas. The former included Edward S. Rand, John Walter, Cynthia, Alice, Pink Pearl, Frederick Waterer and Peter Koster. The well-flowered Azaleas were chiefly rustica varieties and Mollis hybrids. Mr. G. G. Whitelegg had an effective group of Azaleas which included the varieties Chicago, David Teniers and P. Kersbergen.

Trees and Shrubs.

In the two large marquees there were many interesting and valuable collections of trees and shrubs, and, whilst most colour was provided by the massed groups of Rhododendrons and Azaleas, the general collections and also the one magnificent display of Clematis provided plenty of flower as well as useful foliage. The collection of Clematises was arranged by Messrs. George Jackman and Son. A great many varieties were represented, and all were splendidly grown; seldom, if ever, have these delightful climbers been shown in such excellence as on the present occasion. Of the many varieties which Messrs. George Jackman and Son grow so well, the following is a representative selection. Beauty of Worcester, bluish-violet, with prominent white stamens; Crimson King, vivid red, shading to a paler tone in the centre of the sepal; Duchess of Edinburgh, the best double white and sweetly scented; Duchess of York, pale blush-pink; Empress of India, pale violet-purple; Fairy Queen, pale flesh-pink, with deep pink bar; King Edward VII, a beautiful puce-violet with crimson bar; King George V, light flesh pink with lighter bar; Lady Betty Balfour, deep velvety purple; Lord Neville, dark plum colour; Madame Edouard Andre, bright red; Mrs. Cholmondeley, light blue; Star of India, reddish plum colour with red bars; Ville de Lyon, bright carmine; and the popular Nelly Moser.

An exceedingly attractive group of flowering trees and shrubs was arranged by Messrs. Hillier and Sons. There were many especially well-flowered Cherries of lage size, including Prunus serrulata rosea, P.s. Sekiyana, P. Cerasus var. nobilis and P. C. var. Watereri. The useful flowering Crabs were also an important feature of this valuable exhibit, and the chief sorts were Pyrus Malus Hillieri, P. m. floribunda, P. m. purpurea and P. m. Sargentii. Besides these there were many Brooms, Wistarias, Laburnums, Rosa Hugonis, Rosa Moyesii, Rosa Xanthina and a flowering plant of Beschorneria yuccoides. In another group nearby, Messrs. Hillier and Sons showed many rare and interesting shrubs with Rhododendrons, Azaleas, Standard Brooms, Japanese Maples and Hydrangeas. Amongst other things there were examples of Taiwania cryptomerioides, Cunninghamia Konishii, Juniperus Wilsonii, Thuya Lobbii Hillieri and Cryptomeria formosensis.

In a corner space, Messrs. J. Cheal and Sons set up an effective group of Laburnums, standard Brooms, Japanese Maples, Lilacs and other general shrubs, with good selections of Rhododendrons and Azaleas, including the pretty little Kurume Azaleas. Mr. R. C. Notcutt contributed two separate groups; one in the centre of the tent contained many Lilacs, an excellent large bush of Crataegus Oxyacantha Double Scarlet, Pyrus aldenhamensis, Magnolia purpurea, and other useful shrubs, while the group by the side of the tent was composed of a great variety of Brooms, both as standards and bushes, Daphne neapolitana, and Potentilla fruticosa Veitchii.

A large, semi-circular group of trees and shrubs was arranged by the Donard Nursery Co. They had tall, well-flowered plants of Enkianthus campanulatus, graceful Brooms, a spreading bush of Lomatia pinnatifolia, Leptospermum Nicholsii, Myrtus obcordata, Pieris formosa, Pentstemon heterophylla, Choisya ternata, Pernettya Bell's Seedling, still carrying its large, showy fruits; Pittosporum Mayi, Raphiolepis ovata, and many more shrubs of great interest.

In a goodly corner space, Mr. G. Reuthe had an effective group of Rhododendrons, Kurume and other Azaleas, with standard Brooms, and Enkianthus campanulatus. He also showed sprays of Magnolia macrophylla, M. hypoleuca, Davidia involucrata, Embothrium coccineum, Edwardsia grandiflora, Crinodendron Hookeri and other uncommon shrubs.

On the tabling, Mr. W. J. Marchant set up a group of shrubs which included Embothrium coccineum, Cornus Kousa, Halesia tetraptera and Nothofagus Cunninghamii. W. West Neve, Esq. (gr. Mr. L. Chilvers), West Court, Bray-on-Thames, staged many vases of excellent flowers of Paeonia Moutan in a variety of colours.

Good trusses of Lilacs were shown by Messrs. W. and J. Brown, whose varieties were Charles Joly, Michael Buchner, Madame Lemoine and President Carnot, double-flowered varieties; and Jan Van Tol, Charles X, Souvenir de L.

Späth and Reaumur, singles. They also showed sprays of Choisya ternata, pot plants of Heliotrope Lady Roberts, Salvia Harbinger and Coltness Gem Dahlias.

On the tabling, Mr. CHARLES TURNER grouped Lilacs with Ceanothuses, Pyracanthas and foliage shrubs. The double Lilacs included Miss Helen Willmott, white; Charles Joly, lilac, showing pale reverse, and Charles Sargeant, a large truss of pale lilac colour. Amongst the singles were Roi Albert, Souvenir de L. Späth, L'Oncle Tom and Congo, of lilac shades, and Marie Legraye, a good white. Messrs. WILLIAM WATSON AND SONS staged floriferous plants of their new hardy Brooms, Lady Moore, pale flesh and crimson; Dorothy Walpole, deep crimson and rose; and Lord Lambourne, bright crimson and gold.

The YOKOHAMA NURSERY CO. had an exceedingly interesting collection of dwarfed Conifers, Maples, Oaks and other trees, with old Kurume Azaleas flowering freely in apparently inadequate bowls. They also showed many fascinating miniature Japanese gardens complete with bridges, lanterns and figures.

Trees and Shrubs Out-of-Doors.

At the Embankment end of the large marquees there were the accustomed collections of admirable trees and shrubs. Considerable space was filled by Messrs. A. CHARLTON AND SONS with a varied collection of well-grown examples. Japanese Maples, Rhododendrons, Brooms and deciduous Azaleas were present in quantity, and there were also specimens of Podocarpus chilina, Eriobotrya japonica, Acacia armata, Decaisnea Fargesii, Acer Prince Handjery, of robust habit and with rosy-tinted leaves, and many free-flowered Kurume Azaleas. In a small bed, Mr. R. C. NOTCUTT grouped Azalea Malsatica and Kaempferi, bearing medium-sized, reddish flowers, with a few Mollis hybrids and Japanese Maples.

A pair of gigantic Chamaerops Fortunei flanked the out-door exhibit of trees and shrubs arranged by Messrs. L. R. RUSSELL, LTD., who also showed Dicksonia antartica, various Ivies, Laburnums, Lilacs, ornamental Vines, Japanese and other Maples, Ceanothuses and Brooms. Mr. J. KLINKERT arranged a considerable quantity of topiary specimens in evergreen Box, which illustrated long, patient and skilful pruning. One of their incomparable collections of Japanese Maples was shown by Messrs. FROMOW AND SONS. In this they illustrated the great charm of grace and diversity of form and colouring which is possessed by these shrubs. The chief specimens were of Acer dissectum palmatifidum, A. d. ornatum, A. palmatifidum laciniatum, A. p. l. Crispii, A. p. l. roseum marginatum, and A. p. l. corallinum. Messrs. ROBERT GREEN AND SON set out an extensive collection of well-grown Bay trees.

A well-balanced group of hardy trees and shrubs arranged by Messrs. FLETCHER BROS., included dwarf Conifers of the type valued for the rock garden, and especially Pseudotsuga Douglasii Fletcheriana, Cupressus Lawsoniana Fletcheri and Abies Pinsapo glauca. They also showed standard Brooms and other deciduous shrubs. Messrs. HARRODS, LTD., had topiary specimens and Bay trees.

In an interesting group, Messrs. WATERER, SONS AND CRISP showed Conifers which included well-grown examples of Sciadopitys verticillata, various Cedars, Thuyas and Cupressus, with Wistarias, Laburnums, Enkianthus campanulatus and Pyrus Aria lutescens. Messrs. HOLLAMBY'S NURSERIES showed Japanese Maples, Conifers, Ivies and various flowering shrubs.

Plants of Special Interest.

FOR TRIAL AT WISLEY.

Viola Baby Princess.—A dwarf, free-flowering variety of bushy habit, bearing medium-sized, dark blue flowers which have a small, pale yellow "eye." Shown by Mr. A. J. COBB, Shinfield, Reading.

Wallflower Ellen Rannow.—This variety was shown as a plant for exhibition, market cultivation, and as a cut flower. The plants were single-stemmed, of erect habit, and bore large, single, yellow flowers. Shown by Mr. A. HANSEN.

CULTURAL COMMENDATION.

Linnaea borealis.—A very good pan of this hardy little trailing plant "from Morayshire" was shown, and it bore large numbers of its interesting pale, flesh-coloured flowers. Shown by Mrs. WALTER JONES, Aberuchill, Perthshire.

The new arrangement at Chelsea which provided a special place for all the new and rare plants and flowers submitted to the Floral Committee which did not receive award was admirable in its inception, but, unfortunately, it was not carried out entirely. Ample space was provided at the northern end of the Primula tent, and many visitors came to see the plants which, for some reason or other, were not selected for award, and they saw only a part of the rejected. We conclude that exhibitors were made acquainted with the new departure and, this being so, we would point out that the removal of plants was unfair to all concerned. It was unfair to the Society, to the public and to the exhibitors themselves. In the circumstances, we can only refer to those novelties of merit which were left for inspection, although we are aware that on the Tuesday there were many more, but when the Committee had finished its work it was too dark to make examination of the novelties.

Of those which were set out in the special place, the following impressed us as being the most noteworthy. Azalea Gog was a companion of the variety Magog which received an Award of Merit, and in our opinion is the better garden plant of the two. In addition to a large, well disposed truss of glowing orange-scarlet flowers, which are lightly suffused with rose in the centre of the truss, this variety has the charm of purple tinting on the young leaves. It was shown by A. WILLIAMS, Esq., Werrington Park, Launceston, Cornwall. Messrs. WILLIAM CUTBUSH AND SON showed their dwarf Polyantha Rose Sunshine. We believe that the old favourite, climbing William Allan Richardson is one of its parents. This sweetly-scented new variety is similar in colour to the climber, but the flowers are flatter, and the rich orange colour does not appear to fade. A goodly pan of Jacobinia (Justicia) carnea magnifica, a plant which a few decades ago was in general cultivation in our stove houses, was shown by Sir WILLIAM LAWRENCE, Bt., Burford, Dorking, who also showed Isoplexis canariensis, an uncommon little greenhouse evergreen shrub which bears yellow flowers shaped somewhat like those of the Foxglove, and over an inch long. They have a long, pointed calyx, and the upper segment of the corolla projects beyond the lower. A curious and interesting Codonopsis species, K.W. 7531, from Tibet, was shown by Colonel MESSEL, Nymans, Handcross. The whole plant, which is about a foot in height, has small, pale green, cordate leaves and solitary, nodding, campanulate flowers of reddish-maroon colour, paling at the margins. Bellis perennis Princess Elizabeth, a sport from the pretty pink variety Dresden China, is an attractive little double-white Daisy, whilst the flowers are young, but at maturity they have a dull, dirty appearance. It was shown by Mr. ARTHUR YOUNG. Hydrangea Princess Elizabeth is one of the many splendid seedlings of Hydrangea Hortensia raised by Mr. H. J. JONES. It produces a very large head of pretty, soft pink flowers.

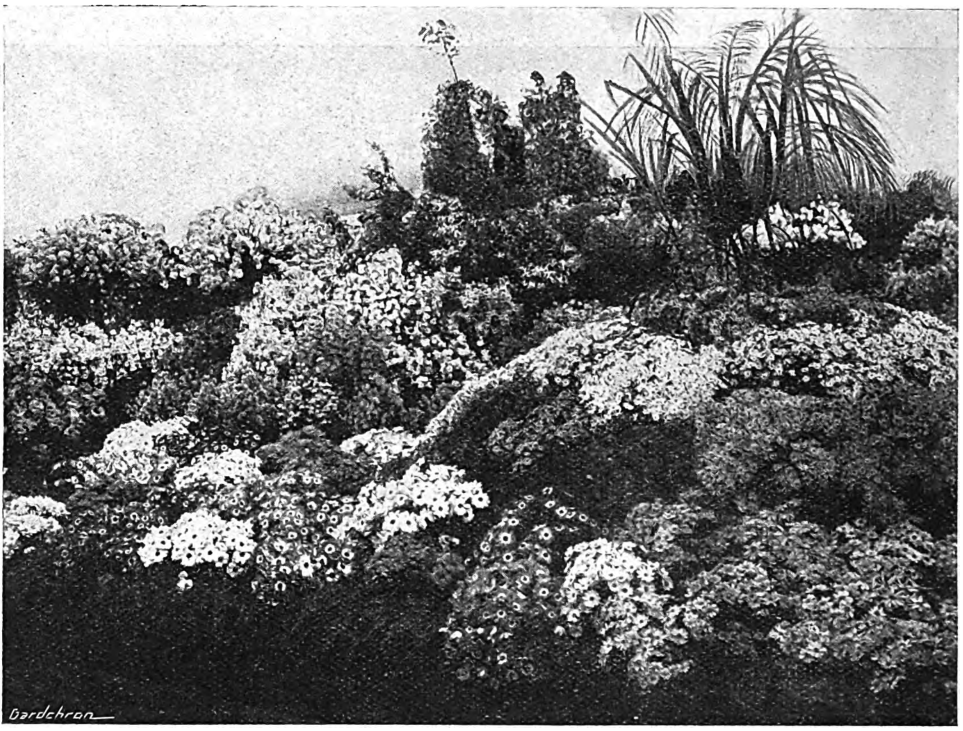

FIG. 190.—CHELSEA SHOW: PART OF MESSRS. JAS. CARTER AND CO.'S EXHIBIT OF GREENHOUSE PLANTS.

Awarded a Silver Cup. (see p. 377).

Formal Gardens.

While the formal gardens, which were set out along the Elm Avenue, presented an interesting and, on occasion, instructive variety, in a few there was displayed a tendency to over-elaborate them with vases, statuary and other material ornaments. As there is a distinct section, and places, for garden sundries, to which such things properly belong, it seems to us that their inclusion amongst the formal gardens detracts from the general good effect of the show.

In the garden made by Messrs. WM. WOOD AND SON there was an ornate terrace with a well-built summer-house in the background. In front there were Yew hedges, with borders and beds and a sunken, circular pond. In the borders they planted Anchusas, Geum Dolly North, Delphiniums, Aquilegias, and in the background there were good Rhododendrons. Messrs. VERNON BROS. made a square garden and surrounded it with trim Box hedges. A terrace showed a round pond set in red brick. The arrangement of the beds was strictly formal, and these were planted with Violas and Pansies.

Another rectangular garden was made by Messrs. Hodsons, and this contained a sunken garden. The square paving-stones gave it a rather severe appearance. In the square were set Violas and Ericas. A terrace was brightened with Rhododendrons and Azaleas. Mr. James Macdonald made a garden to show his smooth, green turf, and included an oblong pool with a leaden figure. The chief features of the garden made by Messrs. W. H. Gaze and Sons were the very good Yew hedges and red brick paths, with a terrace in the background there was an effective old garden wall with a garden house in a corner. The borders of Lilium Harrisii and pale yellow Azalea mollis gave a very cold effect on the opening day. Messrs. J. Cheal and Sons placed an ornamental pair of gates in the centre, but entrance to the garden was obtained from side openings. There were trim Yew hedges and a semi-circular pergola of ornate design, and a small sunken garden with octagonal pool. Topiary specimens, small beds of Polyantha Roses and Azaleas were utilised for the chief plantings.

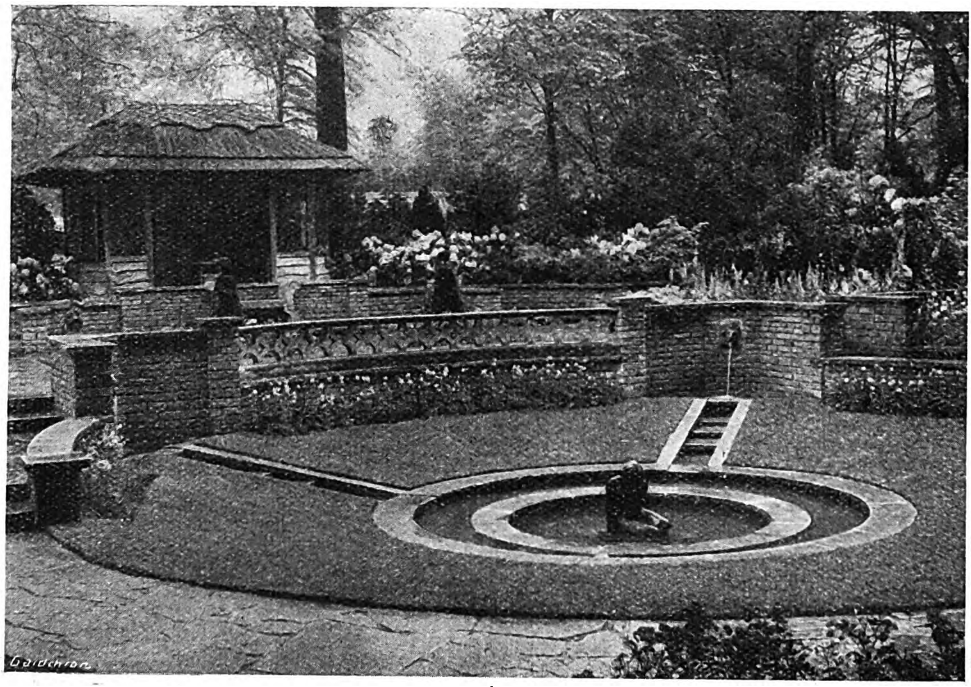

FIG. 191.—CHELSEA SHOW: MESSRS. W. WOOD AND SON'S FORMAL GARDEN.

Awarded a Silver-Gilt Flora Medal. (see p. 403).

Two gates with stonework gave access to the garden of Mr. H. Hemsley. Within, there were a sundial and an inviting rustic summerhouse in one corner of the garden. Polyantha Roses were planted on the level, and on the terraces there were Rhododendrons, Brooms, Kalmias and other shrubs, with Lupins, Geums, Cheiranthus Allioni and Violas. Messrs. Baggesons Nurseries had a rustic gate and an old arch as entrances. Inside there were a sundial, dipping well and pool with sandstone rock. The planting was made with a few Conifers, various general shrubs, Azaleas and alpines. Mr. John Wood had a stone terrace in process of erection and a rock garden with cascades. A small garden made by Mr. John Scott was enclosed by a shrubbery, and there was a small rock garden. It was an unpretentious and restful garden.

A formal garden in association with a large rock garden was exhibited by Mr. Ernest Dixon. From a sunken garden there rose a series of terraced boulders. He planted small deciduous trees, Conifers, Rhododendrons, Irises, Geums, Campanulas, Saxifragas and other flowering plants. Messrs. Wallace and Co. also had a large garden. There were pools, with stepping-stones, surrounded by grass. In the background there was a cascade which fed the pools. Various aquatics were planted at the margins of the pools. In the shrubbery borders they planted Azaleas, Rhododendrons and Japanese Maples, which provided glowing colours. A square lawn surrounded with paved walks and borders was constructed by Messrs. Skelton and Kirby. There was also a stone trough. In the borders were Kalmias, Brooms, Rhododendrons, Irises, Aquilegias and other border plants.

The formal gardens of the Ravenhead Sanitary Pipe Co., the Horsecombe Quarries and Stone Works Co. and the Rus Garden were obviously intended to illustrate the value of the material used in their construction.

Science and Art.

While the exhibits in the Scientific Tent, by Monument Road, did not contain anything new of outstanding value to the general cultivator, there was much of interest to be seen and learnt. The new arrangements made by the representatives of the R.H.S. were admirable in every respect. Immediately on entering the tent the visitor saw at least two, and often three, officials ready and anxious to answer, to the best of their knowledge, any question that might be put. We believe that the queries were many and various, for during the ten minutes or so in which we were receiving information concerning the Society's exhibits, we heard succinct and helpful replies given on the following:—The streak "disease" of Sweet Peas; the best means of intensifying the colour of Sweet Pea blooms; fifty per cent. fasciation of the stems and flowers of an Erigeron; chemical manures; and the colour factors of Codiaeums and Dracaenas. A plant was named from what might well have been termed "insufficient for identification," and, as we left, a grub was being identified.

One of the most topical exhibits was the photographs from the John Innes Horticultural Institution, illustrating experiments in the "Breaking of Tulips." These showed that "breaking," or "rectifying," as the specialists have it, is "infectious and transmissible from bulb to bulb by bringing the internal tissues of a healthy bulb in contact with freshly cut tissue from a 'broken' bulb, when in the dormant stage, before the bulbs are stored." The photographs showed that "breaking" and "parrotting" had been artificially induced by inserting plugs of tissue from the bulb of a broken variety into healthy breeder (self coloured) bulbs, and by grafting "breeder" and "broken" bulbs together. As was stated, all seedling Tulips produce self coloured flowers, which are termed breeders. Sooner or later most Darwin Tulips "break" into feathered or flamed forms, and once a bulb has broken it remains broken, and has never been known to revert to the breeder stage and produce self-coloured flowers. The broken forms of a particular variety have been known to exist for at least seventy years. In another part of the tent the Institution showed specimens of graft-hybrids of Solanum luteum on a commercial Tomato; a layer of Solanum sisymbrifolium over S. nigrum var. gracilis, and S. sisymbrifolium over S. laciniatum.

The Director of the Royal Gardens, Kew, sent herbarium specimens of plants from the Argentine Andes. Those of most garden value and interest seemed to be Berberis montana, B. linearifolia, Vescicaria medocina, Viola cotyledon, Mutisia decurrens, Calceolaria poikilanthes and Ourisia coccinea.

The Rothamsted Experimental Station filled a considerable space with valuable and interesting exhibits. A plant of Broad Bean, with control, made it abundantly clear that the recently discovered soil element Boron is essential to the plants well-being. Only a minute proportion, one part to a million, of Boron is required, and fortunately, so far as is known, it occurs naturally in all soils. The investigations on Boron are principally of scientific interest, and of more value to the cultivator were the illustrations showing the value of lime, and the admirable series dealing with the "Nutrition of the Plant."

The exhibit from the Seale-Hayne Agricultural College dealt with soil pests and diseases, and included specimens showing the devastations caused by eelworm in Daffodils; Armillaria Mellea and other root fungi; and the damage caused by leather-jackets and slugs. Miss W. M. A. Brook had drawings of the life histories of some useful and injurious insects, and Dr. M. C. Rayner sent photo-micrographs illustrating some recent observations on Vacciniums.

The East Malling Research Station had valuable diagrams and statistics illustrating the effects of pruning, thinning, and manuring on the market value of various fruits, and there were examples of the average crops per tree under the different conditions. Professor F. V. Theobald showed how insects may be controlled by tar-distillates, by banding and by poultry being allowed to run in the fruit plantations.

In the exhibit from the Experimental and Research Station, Cheshunt, Herts., there were interesting models of appliances for the sterilisation of soil by steam, both in glasshouses and in the open. There were also examples of the Verticillum Wilt of Tomatos, the Fernleaf Mosaic of Tomatos and other diseases, with valuable observations concerning them.

Dr. G. H. Rodman had most interesting illustrations of the life history of the plant-sucking insect, Zygina paroula, with examples of the damage it causes, and also showed the use of X rays in plant investigation.

In an adjoining tent there were the customary arrays of paintings in water colour and oil of garden scenes and flowers, and also plans and photographs of gardens planned and laid-out by various landscape gardeners. For the British botanist there were many original black and white drawings which had been used to illustrate *Common British Wild Flowers, Easily Named*, by Ernest T. Waltham. These were exceedingly faithful representations of the principal native flowers of our country. Mr. Waltham also showed good lantern slides and water colours of such subjects as Wistaria sinensis as a bush plant, the blue Gentian, and a drift of Rhododendrons in the Alps.

Garden Sundries.

It seemed that the demand for space for the display of greenhouses, with heating appliances, lawn-mowers and garden tools, garden furniture, specifics for prevention and cure of insect and fungoid pests of plants and all else that is included as garden sundries, increases yearly, and at Chelsea this year a considerable space both in the open and under canvas, was allotted.

In the Lime Avenue, where was *The Gardeners' Chronicle* kiosk, and those of other horticultural journals, exhibitors generally had made a welcome attempt to give their kiosks, tents and stands a much brighter effect, and consequently, even on the miserably wet and cold first day of the show there was a decided Exhibition atmosphere. Other sundries exhibits were shown in the Elm Avenue, in Monument Road, on the Lawn and under canvas.

An extensive selection of their well-known greenhouse boilers, especially the Bisson, Horseshoe and Twinfire types, was shown by Messrs. Chas. P. Kinnell and Co., who also had a tank tower and samples of their garden hose.

Well-built greenhouses and frames of considerable size were erected by Messrs. Duncan Tucker and Sons, Messrs. David Swain and Co., Messrs. Skinner Board and Co., Mr. James Gray, Messrs. Boulton and Paul, Ltd., who also had garden seats, Messrs. J. Hayward and Co., Messrs. Messenger and Co., Messrs. A. Overend and Sons and Messrs. J. Weeks and Co.

Lawn-mowers were shown in considerable variety, and included several motor-driven machines of handy size and easy to use. The well-known Atco pattern was shown by Messrs. C. H. Pugh, Ltd. Messrs. Ransomes, Sims and Jeffries, Ltd., had their latest patterns and also showed an efficient grass-edge trimmer. Messrs. A. Shanks and Son, who claim to be the oldest makers of lawn-mowers, had well-designed motor machines, hand-drawn mowers of various sizes and garden rollers. Messrs. T. Green and Son, another old and well-known firm, also demonstrated the value of their motor-driven, horse-drawn and hand lawn-mowers, and had a good selection of garden rollers. Messrs. Dennis Bros., Ltd., had their types, and the J.P. Super Lawnmowers, Ltd., set out examples of their geared and easy-running mowers. The Godiva Engineering Co., Ltd., had lawn-mowers, tennis ground markers and other appliances. Mr. Job Hansen showed a tractor, hedge clippers and other tools.

Knapsack and power-spraying machines, often with spray powders and fluids, were freely displayed. The chief exhibitors were the Eclipse Spraying Co., The Four Oaks Spraying Machine Co., who had several excellent patterns of sprayers, and also showed garden syringes; the F. N. P. Manufacturing Co., Ltd., Messrs, J. Haws, who included with garden engines, their well-known patterns of watering cans and water carriers; The Holder Harriden, Ltd., Messrs. Martineau and Smith, Messrs. Robinson Bros., Ltd., who showed their special insecticides; and Mr. A. S. E. Sedgwick, who demonstrated the value of his handy little greenhouse sprayer which may be readily fixed in an ordinary bottle. The Thames Bank Iron Co. had a good range of heating apparatus and accessories.

Messrs. Abol, Ltd., had a wide range of their well-known spraying machines, with many insecticides and washes and fertilisers. Worm-killers, weed-killers, quassia, tobacco and other insecticides and their "Acme" aids to gardening were set out by the Acme Chemical Co. An attractive display was made by Messrs. Adco, Ltd., with plants grown with the aid of "Adco" and Synthetic Farmyard Manure. The Bayer Products, Ltd., had fungicides and insecticides.

Messrs. Corry and Co., Ltd., had a large kiosk, where they made attractive displays of White Fly Death, Weed Death, Liquas, Summer Cloud Shading, Lethorion Vapour Cones, chemical manures and a great many other essentials for successful gardening. Tomorite, set out in attractive tins, was one of the special features of the stand of Messrs. Prentice Bros., and they had growing plants of Tomatos, heavily laden with fruits to illustrate its great value. The old favourite Ichthemic manure was also shown. Messrs. J. Fison and Co. showed their special manures for Sweet Peas, Strawberries and other plants, and also had various garden sundries. The Garden Supplies, Ltd., made a special feature of their Climax lawn sand in a very attractive stand, and also showed Alphol chemical manure, put up in bags and cartons.

Messrs George Monro, Ltd., had an extensive array of insecticides, manures and other garden sundries. Special prominence was given to Volck, a preparation which is recommended for killing red spider. They also made special displays of their fumigating compound and the Simar Rototiller and Mono-Trac Cultivator. In the Sundries Tent, Messrs. Murphy and Son had samples of their white fly fumigant and insecticides. The Radium Fertilizer Co. had bags of their chemical and also lawn sand.

An especially attractive display was made by Messrs. G. H. Richards, Ltd. In this extensive collection were their well-known XL ALL preparations, a white fly Vaporiser, fumigating shreds, leaf-miner, insecticide and other specifics. Good samples of canes, tying materials and the Stonehouse Compound Fertilisers were also attractively staged. Messrs. Fowler, Lee and Co. showed soil sterilisers and fruit-bottling appliances. Messrs. Jeyes' Sanitary Compounds Co., Ltd., had their well-known washes and compounds. The South Metropolitan Gas Co. showed sulphate of ammonia and wood preservatives.

Messrs. Wakeley Bros and Co. had samples of their valuable hop manure and garden ornaments. Messrs. H. Scott and Sons displayed samples of loam, insecticides and weed-killer. Powder spraying appliances, insecticides and fumigants were staged by Messrs. Timothy and Sandwith.

Garden tools and watering appliances occupied considerable space in various parts of the grounds. Messrs. Cooper-Stewart Engineering Co. had an efficient sprinkler. Various tools were shown by Messrs. Holtzapffel and Co., Messrs. Medoc and Guinne Patent Secateurs, Ltd., Messrs. R. Melhuish, Ltd., Miss M. Nalder, Messrs. Piccard, Picket and Co., Mr. D. J. Walker, Messrs. E. J. Woodman and Sons and Messrs. A. Smellie and Co.

Useful ladders, steps and barrows were set out by the Acme Patent Ladder Co. Messrs. Abbot Bros., who also had bird nesting boxes; Messrs. John Allen and Sons, whose speciality was the Oxford Roadless Barrow; Messrs. Drew, Clark and Co., and Mr. H. C. Slingsby. The Chase Continuous Cloche Co. had their useful pattern of patent protector and also garden ornaments. The Castle Shipbreaking Co. showed garden furniture in teak-wood. Cane furniture was shown by the Dryad Works Co. Messrs. Robert Green, Ltd., had garden seats, ornaments and tools. Messrs. Harrods, Ltd., set out garden seats and hammocks.

The labour-saving Shoulder Hoe and cultivators attracted attention, as also did the En-Tout Cas and the Fernden Lawn Tennis Courts. Messrs. Pulham and Son had a good selection of garden ornaments, and Messrs. Wm. Wood and Sons, Ltd., built an attractive garden house and showed many vases and other ornaments as well as a wide range of sundries. The Florists' Telegraph Delivery Association demonstrated the wide ramifications of their system.

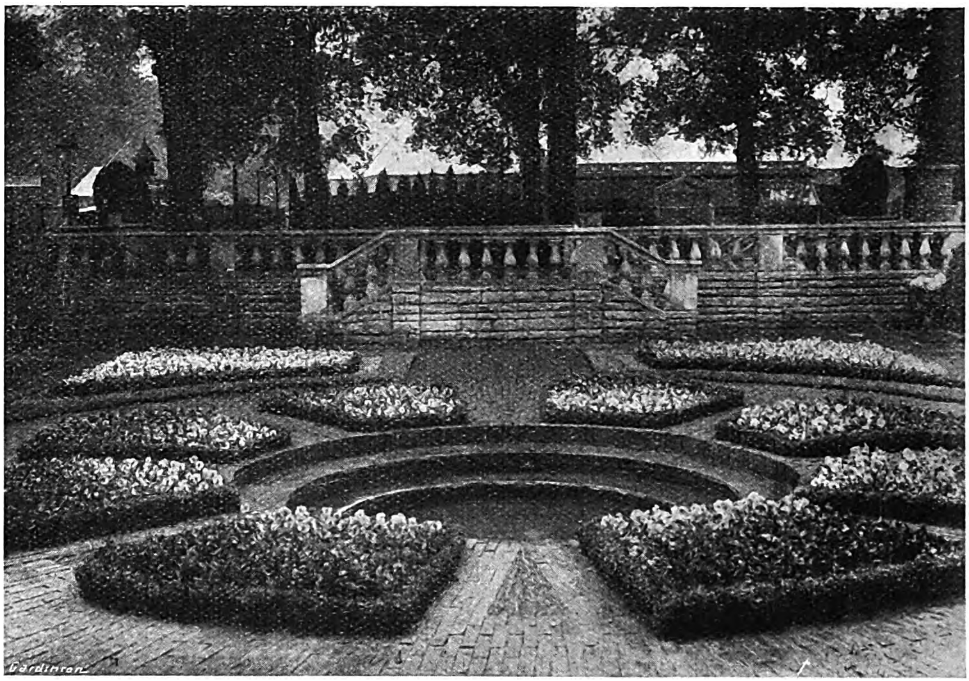

FIG. 192.—CHELSEA SHOW: MESSRS. VERNON BROS.' VIOLA GARDEN.
Awarded a Silver-Gilt Flora Medal. (see p. 403).

THE PRIMULA CONFERENCE.

The Conference on Primulas, held in conjunction with the Chelsea Flower Show, was held on Thursday, May 24, the morning session commencing at 11 a.m. There was a moderately large attendance, over which Sir David Prain presided, and the proceedings commenced with a paper by Mr. Fred J. Chittenden, Director of the R.H.S. Gardens, Wisley, dealing with Professor Wright Smith's Re-classification of the Genus Primula. In this paper he summarised the previous work done with regard to the classification of the genus, and gave interesting details of the increase in the number of known species, from the eighteenth century, when six were recognised, to the time of the present work, which deals with five-hundred-and-thirty-seven species. In this classification no new names have been introduced, but all the groups, thirty-two in number, have been clearly delineated. He pointed out that P. vinciflora and its allies were considered so distinct that they have been separated to a separate genus, *i.e.*, Omphalogramma.

Mr. Chittenden also emphasised the value of this monograph to the would-be cultivator of Primulas, pointing out that a knowledge of the group to which each individual belongs governs the principles which are responsible for the successful cultivation of it.

He explained in detail the key to the sections, and assisted the enlightment of his audience in this respect with a series of Primula illustrations, chiefly from the *Botanical Magazine*, while his remarks and observations on the various members of each section, gained from intimate knowledge of their habits and requirements, were of great value from a practical point of view. A resumé of the new classification appeared in the *Gard. Chron.* of May 19, p. 354.

At the termination of this address, Sir David Prain expressed the gratitude of the Conference to Mr. Fred. J. Chittenden for his explicit resumé of Prof. Wright Smith's work.

Dr. Handel Mazetti, whose knowledge of Chinese Primulas is unique, and who has been in close touch with Prof. Wright Smith in connection with the work of re-classification, expressed the opinion that the various statements contained in it could be accepted as correct, and stated that he could in no way criticise or comment upon the work.

One of Mr. Chittenden's remarks, that P. obconica was a very variable plant, was questioned, and Mr. Chittenden stated that it had been definitely established that the various forms of P. obconica were not due to the presence of P. sinensis blood. This was confirmed by Mr. L. Sutton.

Another visitor to the Conference spoke of the wide field open to research workers in connection with the colouring of the flowers of Primulas and suggested that the meal on the leaves of many was directly associated with the colouring of the blooms.

Miss de Winton then read a paper entitled, "Inheritance in Primula sinensis." This was exceedingly interesting from a plant-breeder's point of view, and the laws governing the production of various types and varieties, based on Mendel's principles, were well demonstrated. The various mutations that have arisen in the species were dealt with in turn; examples were displayed together with excellent illustrations of the various hybrids that have been obtained by crossing these distinct types. The methods of obtaining distinct colouring of the flowers and foliage, the effect of crossing diploid and triploid sorts, were explained in detail, and Miss de Winton proved herself to be an authority on her subject.

She concluded by appealing to growers of this type of Primula to watch for sports and mutations which might occur, for although they might be of no use commercially they may be of great value genetically.

The Chairman thanked Miss de Winton for her excellent paper, and then introduced Miss Pellew, who read a paper entitled, "Explanation of a Relatively true-breeding hybrid of Primula Kewensis." This was of interest to those who are interested in the genetics of plant breeding, and was followed by one on "Hybrids of P. Juliae and the Primrose and Cowslip," by Dr. C. L. Huskins.

Dr. Huskins dealt with the results that had been obtained in the hybridising of these Primulas; many of the hybrids obtained are of interest, but few are of value from a garden view point. In all instances it has been found that fertility of the first generation plants was high, which is rather surprising, considering the distinctness of P. Juliae; fifty to seventy per cent. of the pollen grains are fertile, but the germination of the seeds is often delayed over a long period.

In crossing the Primrose with P. Juliae, the plants of the first generation bore coloured flowers; they were all comparatively uniform and resembled the Primrose more than P. Juliae; the flowers are produced before those of either parent, which was also the case with the hybrids of P. Juliae crossed with the Oxlip. In this instance their inflorescences were erect, not one-sided as in the Oxlip, and the flowers were similar in size to those of P. Juliae.

Several other crosses have been made, using the Cloth of Gold Polyanthus, and the Hose-in-Hose types, but no definite results have yet been obtained.

This terminated the morning session, for Mr. C. W. Needham, who was to have read a paper on "An Old Garden Primrose"; and Professor Heslop Harrison, whose subject was "Hybrids of the Vernales group of Primulas," were unable to be present.

The afternoon session, with Mr. E. A. Bowles in the chair, commenced with a paper by Dr. Handel Mazetti on "Chinese Primulas at Home," a topic that was of great interest and very useful practically. His knowledge of Chinese Primulas is first-hand, and the manner in which he dealt with their geographical distribution was indicative of many years spent amongst them.

He dealt fully with the climatic conditions of the various regions in which Primulas are found in China, which country he described as geographically the centre of the genus, although eastern China is relatively devoid of them, being low and possessing a very hot climate.

A few, such as P. Paxiana, are found in damp places in north-east China, where the winters are more severe and the atmosphere less humid, but the majority of them are found in eastern Thibet, Szechuan being most rich in them.

Dr. Mazetti described in detail the conditions under which the Primulas grow naturally, giving in many instances the altitudes at which they are found and the plants with which they are associated. P. androsacea, for instance, grows in alluvial soil on the margins of ice-fields, with Parochetus communis as a constant companion; P. werringtonensis inhabits limestone and sandstone soils in thickets of shrubs; P. Bulleyana is to be found in damp places on both limestone and sandstone at an altitude of 8,000 to 9,000 feet, and P. Wilsoni is found in similar conditions only at a lower altitude.

P. Poissonii grows in meadows of the temperate zone, in alluvial gravel covered with a layer of black earth; samples of this earth over both limestone and sandstone have been examined and found to be almost devoid of vegetable matter. It is similar to that of our Fens, and holds moisture well. P. sikkimensis often occupies the beds of springs and P. yargongensis is a typical swamp plant; P. sinolisteri was described as a typical forest plant, while P. septemloba is found in deep soil over limestone.

Numerous other species were dealt with in turn, and the habitats of several were demonstrated by photos taken of them in their haunts.

The next paper was by the Hon. H. D. McLaren who dealt with "Eastern Primulas for the Garden." He spoke of the loss of numerous species to cultivation since the Primula Conference of 1913. He suggested that many of them were vigorous as children but weak in their old age, *i.e.*, after flowering, and that raising them regularly from seeds was the only method of dealing with the majority. Some Primulas, however, seldom set seeds, and it is these that are being lost to cultivation; P. Baileyana was quoted as an example.

He dealt with the raising of Primulas from seeds and their after treatment; also the methods of naturalising them in gardens, and then proceeded to dilate upon the horticultural merits of numerous individual species.

The Primula Conference was concluded with an interesting paper by Mr. N. K. Gould, on "Primulas at Wisley," in which was described in an able and descriptive manner, the many Primulas which are grown at those famous gardens, and the conditions under which they flourish.

WILTSHIRE AGRICULTURAL.

The above Association held its show at Salisbury on May 15 and 16, and the large horticultural tent was well filled with trade and other groups.

An outstanding exhibit was that staged by W. F. Gullick, Esq., of Salisbury, who filled one end of the tent with choice bulbous and herbaceous plants and shrubs. We noted fine heads of Lilium Mrs. R. O. Backhouse, L. Martagon album, L. regale, L. excelsum, L. Farreri, L. rubellum, L. croceum, and a large number of L. umbellatum varieties. His Hydrangeas were particularly good. Sparaxis Fire King and Ixiolirion Pallasii were also shown well, as were Pyrethrum H. M. Stanley, and many Cytisuses.

Messrs. J. Cypher and Son, of Cheltenham, staged a choice collection of stove and greenhouse subjects, including a number of Odontoglossums and other Orchids, and Bougainvilleas. Messrs. Jarman and Co., of Chard, had some fine blooms of Tulips Nora Ware and Inglescombe Pink, and a number of dainty alpine Violas. Sweet Peas were arranged in bold masses by Mr. J. Stevenson, of Wimborne, two outstanding novelties worthy of special mention being Charm and Lilac Time.

Messrs. W. J. Stokes and Son, of Trowbridge, exhibited a collection of well-grown Geraniums and flowering shrubs, amongst which Tricuspidaria Hookeri was exceptionally good.

A pleasing, if small, exhibit of Long-spurred Aquilegias was staged by Mr. C. Wall, Bath, consisting of an improved Scott Elliott strain, with very large flowers, while greenhouse plants in great variety were to be seen in Messrs. Rich and Co.'s group, which also included fine Cinerarias.

The small rock gardens were an interesting feature of the show. Messrs. Maxwell and Beale, of Broadstone, arranged a miniature garden, effectively planted with Dodecatheons and choice alpine plants, and Messrs. Jeans and Trowbridge, Westmoors, arranged a somewhat similar garden, with several nice plants of Azalea rosaeflora. Messrs. Gething and Co., of Chilmark, furnished their rockery with many rare alpines; Primula sikkimensis was well shown, and we noted some fine blooms of Iris Susiana.

Messrs. Scott and Co., Merriott, constructed a small pool, the sides of which were banked with Cheddar Stone, and furnished with a number of miniature shrubs.

Plans, drawings and photographs dealing with garden design, were shown by Messrs. Rogers and Son, Southampton, and other prominent exhibitors were Sir Cecil Chubb, the Hon. George Herbert, George Whatley, Esq., and Lady Hulse.

NATIONAL VIOLA AND PANSY.

At the May meeting, Mr. J. Smith, Superintendent of the Birmingham Parks, gave a lecture on "The Viola and Pansy," at a meeting of the above Society. There was a capital attendance.

Mr. Smith drew attention to the usefulness of Violas as bedding plants for public parks and recreation grounds. He dealt with its qualifications for smoky districts, adaptability for use in colour schemes, and the small cost involved in cultivating large quantities. He then described various methods to be employed in obtaining the greatest effect: massing in self colours for large beds and borders, so as not to clash with other subjects; colour schemes for ribbon borders, or for a groundwork to other plants; and adaptability to harmonise with other plants, such as Roses, Pelargoniums, Fuchsias, herbaceous subjects and shrubs. Varieties were described and their qualifications stated. Propagation, wintering, planting and cultivation next received attention. Reference was also made to alpine varieties, while the Pansy garden came in for special comment.

ANSWERS TO CORRESPONDENTS.

Begonias Attacked.—*J. W.* Your Begonias are suffering from what is termed Begonia rust, caused by a minute mite which often infests these plants. Dust the plants with Tobacco powder or dip the growths in nicotine solution to eradicate this pest.

Bracken.—*J. H. T.* It is not an easy matter to establish Bracken on a new site. On the other hand, it is not easy to destroy Bracken once it has become thoroughly established. Your best plan would be to lift the rhizomes while in a dormant condition, place them in shallow boxes of peaty soil, and keep them in a frame until they have started into growth, when they could be planted in a mass without disturbance.

Names of Plants.—*F. W. C.* Prunus Padus (Bird Cherry). — *Correspondent.* Trillium grandiflorum.

Communications Received.—W. S. F.—J. H. B.—(Thanks for 2/- for R.G.O.F. Box).—J. F.—R. J. G.—D. M. C.—K. N. H.—W. D.—A. G.—W. A.—A. B. B.—G. W.—L. E. M.—J. B. D

THE

Gardeners' Chronicle

No. 2163.—*SATURDAY, JUNE* 9, 1928.

CONTENTS.

Alpine garden—
  Lippia nodiflora ... 413
  Oenothera taraxacifolia 413
  Polygala calcarea ... 413
  Pyxidanthera barbulata 413
  Wahlenbergia serpyllifolia 413
Apple Orleans Reinette 421
Bog and water garden—
  Aponogeton distachyum 412
  Hottonia palustris... 412
  Senecio Clivorum ... 413
Books, notices of—
  Garden-craft in the Bible 420
  Studies in the Ecological Evolution of the Angiosperms . 420
Chrysanthemums at Reaseheath, early-flowering 409
Eaton Park, Norwich 408
Fruit Competitions for amateurs 407
Fruit trees, two lesser-known pests of ... 416
" Gardeners' Chronicle" seventy - five years ago 409
Gardeners' Club ... 408
Hardy flower border—
  Phytolacca decandra 412
Indoor plants—
  Platytheca galioides 412
Kew, the Rhododendron Dell at ... 407
King's Birthday honours 407
Linnean Society, new foreign members of the 408
Meconopsis Baileyi ... 408
Mesembryanthemum . 419
Orchids of the Malayan Peninsula, Terrestrial 416
Primula, the genus ... 419
Rose garden—
  Chaplin's Pink Climber 412
  Early Wild Roses... 412
Royal Gardeners' Orphan Fund ... 421
Russell, Mr. L. R. ... 408
Societies—
  New York Orchid... 424
  Royal Horticultural 421
Sulphate of ammonia for golf greens ... 407
Trees and shrubs—
  Cupressus Lawsoniana erecta viridis 412
  Cytisus sulphureus 412
  Pieris formosa ... 412
Walker, Miss Winifred 408
Ward's, Mr. F. Kingdon, tenth expedition in Asia ... 414
Week's Work, the ... 410
Wisley, Royal visit to 407

ILLUSTRATIONS.

Apple Pests, two lesser-known 416, 417, 418
Chelsea Show : exhibits at 422, 423
Golf greens, treatment of... 409
Pyxidanthera barbulata 413
Rose Chaplin's Pink Climber 411
Russell, Mr. L. R., portrait of 408
Ward's, Mr. F. Kingdon, expedition : views of 414, 415

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 58·6°.

ACTUAL TEMPERATURE.—

The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London, Wednesday, June 6, 10 a.m. Bar. 29·9. Temp. 60°. Weather, Overcast.

Sulphate of Ammonia for Golf Greens: Stoke Poges Experiments.

THE experiment carried out on greens and croquet lawns at Stoke Poges, already referred to in these pages (*Gard. Chron.*, July 23, 1927), has now extended over some fourteen months. The experiment was started in March, 1927, on two putting greens and on part of the large croquet lawn. The results obtained have been so encouraging that, as from the beginning of this year, seven additional greens are now under treatment. From reports which we have received it appears that the greens which were dressed with sulphate of ammonia early in the present year have already received three applications at the rate of 5 lbs. per 1,000 square feet, and have responded so well to the treatment that they preserved an excellent putting surface during the drought which occurred at the beginning of May. Indeed, those who have had the greens under observation are sure that the treated greens present a marked superiority over those which have not been treated. It should be noted, however, that the greens which have been treated are a little " slower " than those left undressed, but whether this is an advantage or a disadvantage, must be left to the player to decide, albeit that his decision may, perhaps, be apt to be biased by the success of his individual performance upon them. In any case, unduly fiery greens are a terror to the mediocre player and not always a source of unmixed joy to the " plus four " player. Records of the weed flora of the croquet lawn supply decisive evidence of the power of sulphate of ammonia to exorcise both weeds and moss. Plots of the Stoke Poges croquet lawn had, before treatment, a weed population of fifty per cent. This number was reduced by November of last year to eight per cent. Untreated plots started with a weed population of thirty-seven per cent., which remained throughout the year at about that level, and only declined by November to thirty-two per cent. Other weeds, Plantain and the like, also disappeared, but whether such weeds as the Buttercup can be driven out with equal ease is open to question. The Buttercup, however, is a sure indication that the top spit of soil needs attention in the way of drainage. It thrives in a heavy soil, and should be easy of expulsion once the surface of the soil is made porous by dressings with gritty material. The striking photographs which we reproduce (Fig. 193, p. 409) show in decisive fashion the encouragement given by the treatment to grass growth, and the discouragement meted out to the weeds and Clovers. As mentioned in our earlier report, sulphate of ammonia exercises, as is well-known, its most drastic action on Daisies. Under the treatment, these pests of golf links cease to flower and gradually die out. Those in charge of the experiment report that during the wet period of January-February, the golf green " disease " popularly known as black spot, occurred somewhat more prevalently on the treated than on the untreated greens. The malady, which appears to be due to the spread of a blue-green alga of the genus Oscillaria, has for its symptoms black patches in which grass has been suppressed and a slimy alga has replaced it. It may be that the presence of nitrogen helps the growth of the alga, but the malady is not a serious one, as it may be easily controlled by an admixture of sulphate of iron with sulphate of ammonia, or by a light spraying with copper sulphate, a substance deadly to algae in general. In any case, so soon as dry conditions occur the algal patches disappear even without treatment. During the present year the experiment is to be made more complete by treating parts of the experimental plots with compost only, and part with compost and sulphate of ammonia. It is, of course, important to determine the relative uses of the two materials. No one with a knowledge of lawns and greens doubts that the occasional application of a suitable compost will produce excellent results. On light soils the compost should be of a good loamy nature, with well-decayed leaf-mould added when obtainable. For heavy soils there is no better material than sharp sand, unless it be fine granular ashes. Finally it may be mentioned that the heavy dressings of sulphate of ammonia—fortnightly applications at the rate of 5 lbs. per 1,000 square feet, from March 28 to October 29—not only improved the growth of grass on the greens, but also encouraged the finer grasses, a fact generally lost sight of owing to its being the very opposite of that induced by sulphate of ammonia when first applied. The heavy dressings do not appear to have increased the acidity of the soil, as gauged by measurements of P_H values, but this surprising observation will be subjected to renewed investigation during the coming season. The reports before us do not make any mention of the effects of the dressings on golf greens infested by worms. During the summer of last year there was some evidence to show that sulphate of ammonia plots were much more free from this nuisance than were the untreated plots. It would be interesting to know whether this much to be desired freedom was maintained during the winter. We understand that a large number of trials with sulphate of ammonia are being made during the present year, and we may therefore expect before long to have conclusive evidence to show whether these simple methods of periodic top-dressing, combined with occasional dressings with suitable compost, will enable us to do what assuredly we ought to be able to do, namely, make and maintain the finest lawns in the whole world.

King's Birthday Honours.—In the lengthy list of men and women whom the King has delighted to honour by a well-deserved recognition of public or political services rendered at home or in other parts of the Empire, we look almost in vain for the names of those who have rendered yeoman service in the cause of horticulture and agriculture. Sir Alfred Mond, who becomes a Baron, has rendered great service to British industry, and his efforts to secure peace within industry are well-known. He is keenly interested in farming and gardening, and four years ago he presided at the Annual Festival Dinner of the Royal Gardeners' Orphan Fund. The Rt. Hon. Edward Mervyn, Minister of Agriculture for Northern Ireland receives a Baronetcy, and Mr. H. J. Jeans, Member of the Advisory Council for Scientific Research and Secretary of the Royal Society, receives a similar honour. Mr. H. V. Taylor, Horticultural Commissioner under the Ministry of Agriculture, is promoted from M.B.E. to O.B.E., while Dr. A. Voelcker of the Royal Agricultural Society, becomes a Companion of the Order of the Indian Empire.

Princess Mary to Visit the Harrogate Show.—H.R.H. The Princess Mary (Viscountess Lascelles) has very graciously promised to visit the Harrogate Horticultural Show, which is held on both days of the Agricultural Society's exhibition, August 10 and 11. This year the show is to remain open on the first day until 9 p.m. This will be a most interesting event for the floral exhibitors, and an especially fine display of plants, blooms and fruits is anticipated ; already some thirty leading firms have booked spaces. In addition to the visit of Princess Mary, delegates will attend from the Royal Horticultural Society and award their Society's medals.

Royal Visit to Wisley.—We learn that on Saturday, June 2, H.R.H. Princess Mary (Viscountess Lascelles) and Viscount Lascelles paid an informal visit to the Royal Horticultural Society's Gardens at Wisley, and after a tour of the Gardens, under the guidance of Mr. Fred J. Chittenden, took tea in the Laboratory. Princess Mary's keen interest in flowers was very obvious, for she displayed a keen delight in all she saw, and the wide range of attractive features displayed at Wisley at the present time made her visit an exceptionally enjoyable one.

Fruit Competitions for Amateurs.—For the meetings of the Royal Horticultural Society, to be held on July 17 and August 28, fruit competitions are being arranged for amateurs. On the first date there will be classes for Cherries, Gooseberries, Currants, Figs and Raspberries, and on the second date, for Peaches, Nectarines, Melons, Apricots, Plums, Cherries, Blackberries, Loganberries and Apples. There are twenty classes for July 17 and twenty-five for August 28. The schedule of classes and prizes, and the particulars governing the competitions, may be obtained from the Secretary, Royal Horticultural Society, Vincent Square, Westminster. One regulation of the kind to which some objection was taken last year, still remains, *i.e.*, " In order to be satisfied that the conditions governing competitive exhibits are fulfilled, the Council reserves the right to visit by commission, before or after the show, gardens from which fruit has been entered for competition."

The Rhododendron Dell at Kew.—Unofficially, June 3 was Rhododendron Sunday, when crowds flocked to the Azalea Garden and Rhododendron

Dell at Kew. Although many of the flowers on the earlier Rhododendrons and Azaleas were damaged by frosts, the mid-season varieties have been quite up to the average. The dull, cool weather has tended to prolong the season, and the heavy rains were very helpful, at least to the plants growing in the sandy soil of Kew. Among the older varieties represented by many large bushes covered with blooms, are Lord Palmerston (Cynthia), Pink Pearl, John Walter, Mrs. E. C. Stirling, Lady Eleanor Cathcart, Mrs. R. Holford, James Naysmith, Alice, C. S. Sargent, Duchess of York, Everestianum, fastuosum flore pleno, Lady Clementina Mitford, Lady Grey Egerton and Madame Carvalho. Among the newer varieties Professor Hugo de Vries is of outstanding merit, the colour is somewhat deeper than in Pink Pearl, and the bushes more compact in habit; the parents are said to be Pink Pearl and Doncaster. Britannia, with brilliant scarlet-crimson flowers, is a valuable addition to the red varieties. The most striking colour effect in the Dell is provided by a group of half-a-dozen bushes of the rich red Doncaster, beneath a Laburnum festooned with yellow blossoms. In the Azalea garden the varieties Nancy Waterer, coccinea speciosa, Ignaea nova, calendulacea, Daviesii, Gloria Mundi, Unique, and the hybrids of occidentalis are prominent.

New Foreign Members of the Linnean Society.—Five vacancies in the list of foreign members of the Linnean Society of London, were filled recently by the election of the following scientists:—Thore Gustafsson Halle, Chief of the Palaeobotanical Department, Naturhistoriska Riksmuseum, Stockholm; Robert Almer Harper, Professor of Botany, Columbia University, New York; Axel Johan Einar Lönnberg, Chief of the Vertebrate Department, Naturhistoriska Riksmuseum, Stockholm; Thomas Wayland Vaughan, Director of the Scripps Institution of Oceanography, La Jolla, California; and Friedrich Zschokke, Professor of Zoology, University of Basle.

Gardeners' Club.—The third annual meeting and dinner of the Gardeners' Club was held at the Clarendon Restaurant, Hammersmith, W., on the first evening of the Chelsea Show, May 23, when the members spent a very pleasant evening together. The Secretary's report showed a very prosperous state of affairs, and the following officials were elected for the ensuing year:—Chairman, Mr. J. G. Weston, Chatsworth; Vice-Chairman, Mr. T. Hay, Hyde Park; Hon. Secretary and Treasurer, Mr. F. C. Puddle, Bodnant Gardens, Taly-cafn, North Wales; Assistant Secretary, Mr. D. Wilmshurst, Swanley College Gardens. Committee: Mr. A. Bullock, Copped Hall; Mr. C. H. Cook, Royal Gardens, Windsor; Mr. J. Comber, Nymans Park; Mr. W. Hales, Chelsea Physic Gardens; Mr. F. Jordan, Ford Manor; Mr. T. Pateman, Brocket Hall; and Mr. T. E. Tomalin, Stansted Park.

Eaton Park, Norwich.—Most important of the several engagements which the Prince of Wales fulfilled upon his visit to Norwich on May 30, was the opening of Eaton Park, which has been laid-out in an artistic manner by the Norwich Corporation with gardens, lawns, buildings and open spaces for sports and recreations, and which covers an area of eighty acres. The Lord Mayor, in requesting the Prince to open the Park, stated that the idea of acquiring the land for playing fields originated with the Norwich Playing Fields and Open Spaces Society, which raised £900 towards the sum required for the purchase, of which amount £400 was subscribed by the Ecclesiastical Commissioners. He explained that the scheme was commenced in 1924, and that employment had been found for an average number of one-hundred-and-three men over a period of three-and-a-half years.

Mildew on Meconopsis Baileyi.—It has recently been observed that the fungus, Peronospora, which causes the mildew of various species of Poppies, and of Meconopsis cambrica, may attack and very seriously injure the very beautiful M. Baileyi. With a view to acquiring information as to the extent and intensity of the disease, and formulating preventive measures, information is desired as to any cases of mildew observed on species of Meconopsis. Specimens showing suspicious symptoms should be forwarded to Mr. A. G. Cotton, The Herbarium, Royal Botanic Gardens, Kew, Surrey.

Miss Winifred Walker.—At present Miss Winifred Walker, well-known as a painter of flowers, is in the United States executing a number of commissions for flower paintings. This year two of her pictures are exhibited at the Royal Academy and one at the Salon.

MR. L. R. RUSSELL.

Mr. L. R. Russell.—Many and cordial were the congratulations showered upon Mr. L. R. Russell at the recent Chelsea Show when he won the beautiful Commemoration Cup offered for the best exhibit of stove and greenhouse plants. He had only one regret, and it was that death had removed Mr. John Cypher from the competition. Mr. L. R. Russell—Messrs. L. R. Russell, Ltd., Richmond Nurseries, Surrey—is a Londoner, born at Hampstead. When fifteen years of age he began his horticultural career, and for two years was concerned only with the cultivation of Orchids. Then followed a period when he was engaged in the work of garden construction and the propagation and cultivation of Clematises and trees and shrubs generally. In 1885, he took over the Brentwood Nursery, and in 1896, the old and important nurseries of Messrs. Charles Lee and Sons passed into his hands. In the latter year he acquired a nursery at Milford for the cultivation of Ericaceous and American plants. Family changes followed, but in 1911 Mr. Russell obtained the Cedar's Nurseries, at Ham, and these became his headquarters for general greenhouse plants, alpines and herbaceous subjects, and it was here that the double form of Primula malacoides originated. In the nurseries at Richmond, Mr. Russell has a wonderful collection of stove and greenhouse plants, probably the finest in Europe outside botanic gardens, and its importance was demonstrated in the grand group arranged at Chelsea Show (see Fig. 207). Mr. Russell is an ardent lover and student of tropical and sub-tropical plants and when travelling in this country and on the Continent he is always on the look-out for rare subjects; indeed, it is not too much to state that he has rescued many plants from loss to cultivation. So well-known is the collection at Richmond, that Mr. Russell is constantly supplying the principal botanic gardens and colonial governments all over the world. Good plants introduced by him include Sterculia Russelliana, Dimorphanthus (Aralia) mandschurious argenteis marginatis, Hedera dentata variegata, Platanus orientalis folius argenteus variegatus, Gesnera Orange King and many of the best-known varieties of Codiaeums (Crotons) and Dracaenas. At the British Empire Exhibition at Wembley, Mr. Russell supplied plants for the decoration of the exhibits from Australia, Bermuda, Burma, Ceylon, British Guana, Sarawak, the Malay States, etc., and in each case was able to supply those native to, or largely grown in, those countries. Many honours have been won by the Richmond firm, including eight principal awards at the International Exhibition of 1912, one of these being the Dorsetshire County Cup for the best collection of hardy trees and shrubs. Many gold and other medals have been won at the London, Glasgow, Edinburgh, Southport and other leading exhibitions. Mr. Russell has officiated as judge at the Ghent, Antwerp and Boskoop exhibitions, and this year he was awarded a Grand Prix d'Honneur for his Clematises at the Ghent Quinquennial Show. His son and two daughters are associated with him in the business and are becoming almost as well-known as their father in the horticultural world.

Horticultural Activity in Canada.—The Report of the Secretary of the Canadian Horticultural Council contains an interesting survey of the activities of this body. Resolutions which were approved by the Council and submitted to the Canadain Government and other authorities included those relating to Renaming Varieties; the National Apple Week; Schools for Fruit Inspectors; the Appointment of J. Forsyth Smith on the Empire Marketing Board; Arbitration of Dispute; Advertising Canadian Goods in Government Papers; Publicity for Fruit Grading Regulations; Publicity for Fruits and Vegetables in the Prairie Provinces; the Extension of the Central Experimental Farm; Compulsory Inspection for Export; Revision of the Tariff for Seeds; Revision of Plant Registration Regulations, and National Advertising. It will be seen from this brief selection that Canadian horticulture has at its head a live and active body, which is working actively for the advancement of horticulture in all its branches, and especially from a commercial point of view, throughout the Dominion of Canada.

Silver Cup for Paeonies.—The third of a series of Cups presented by Mrs. Edward Harding is offered for award in 1928 for the best exhibit of three flowers of each of six varieties of Paeonies shown by an amateur. Banksian Medals in silver-gilt and silver are offered by the Royal Horticultural Society as second and third prizes. The competition will take place at the fortnightly show at Vincent Square on June 19, and all exhibits must be ready for judging by 11 a.m. on that day. Entries for the competition must be made on forms obtainable from the Secretary, Royal Horticultural Society, Vincent Square, Westminster, S.W.1, by whom the completed forms must be received not later than by the first post on Wednesday, June 13.

Land Reclamation in Bulgaria.—Schemes for the drainage of several marshes have been drawn up recently by the Bulgarian Ministry of Agriculture, and work is to be commenced at once in connection with the Straldja marsh, which work will include the removal of the standing water by means of canals; the total cost of the operations in connection with this marsh is estimated at 8,000,000 leva. The drainage of the Azmaka marsh will be continued at an estimated cost of 5,500,000 leva, and the Indjékeny marsh, near Messemvria, is also to be drained, the completion of which operation it is estimated will cost 25,000,000 leva. Many other large areas are already in the course of reclamation, and it is hoped that the final result of these operations will be to secure 17,000 hectares of arable land, and about 20,000 hectares of ponds and running water for fish breeding and fisheries.

Changes in Crop Productions in 1927.—The recently issued *Report* by the Ministry of Agriculture and Fisheries on the acreage and production of crops, etc., in England and Wales, contains several facts which may be of interest to horticulturists in general. The *Report* shows a general reduction of acreages of all cereals and fodder crops, and in all root-crops with the exception of Sugar Beet, which increased by over 96,000 acres, about seventy-seven per cent. There was a further increase in the acreage of Potatos, Cabbages, Rhubarb, Celery and Carrots; other minor vegetables showed decreases. Potatos, although better than in 1926, failed to reach the average, and root crops generally were disappointing, Turnips, Swedes and Mangolds being under the average and below the yield per acre for the previous year; the yield of Sugar Beet at 6·5 tons per acre, was over two tons less per acre than in 1926. Hops, on a reduced acreage, yielded less per acre than in 1926, and also less than the average. The fruit crops generally were better than in the previous year; the Apple crop was good, being five times as great as the very poor crop of the previous year, and almost equal to that of 1925. Pears were better than in either of the two preceding years, and Plums, although not equal to the large crop of 1926, were better than in 1925. Small fruits showed better results, with the exception of Gooseberries, which were not quite so good, and Strawberries, which were a much inferior crop to that of 1926. Copies of the full *Report* may be obtained from H.M. Stationery Office, Adastral House, London, W.C.2, price 1s. 3d. net.

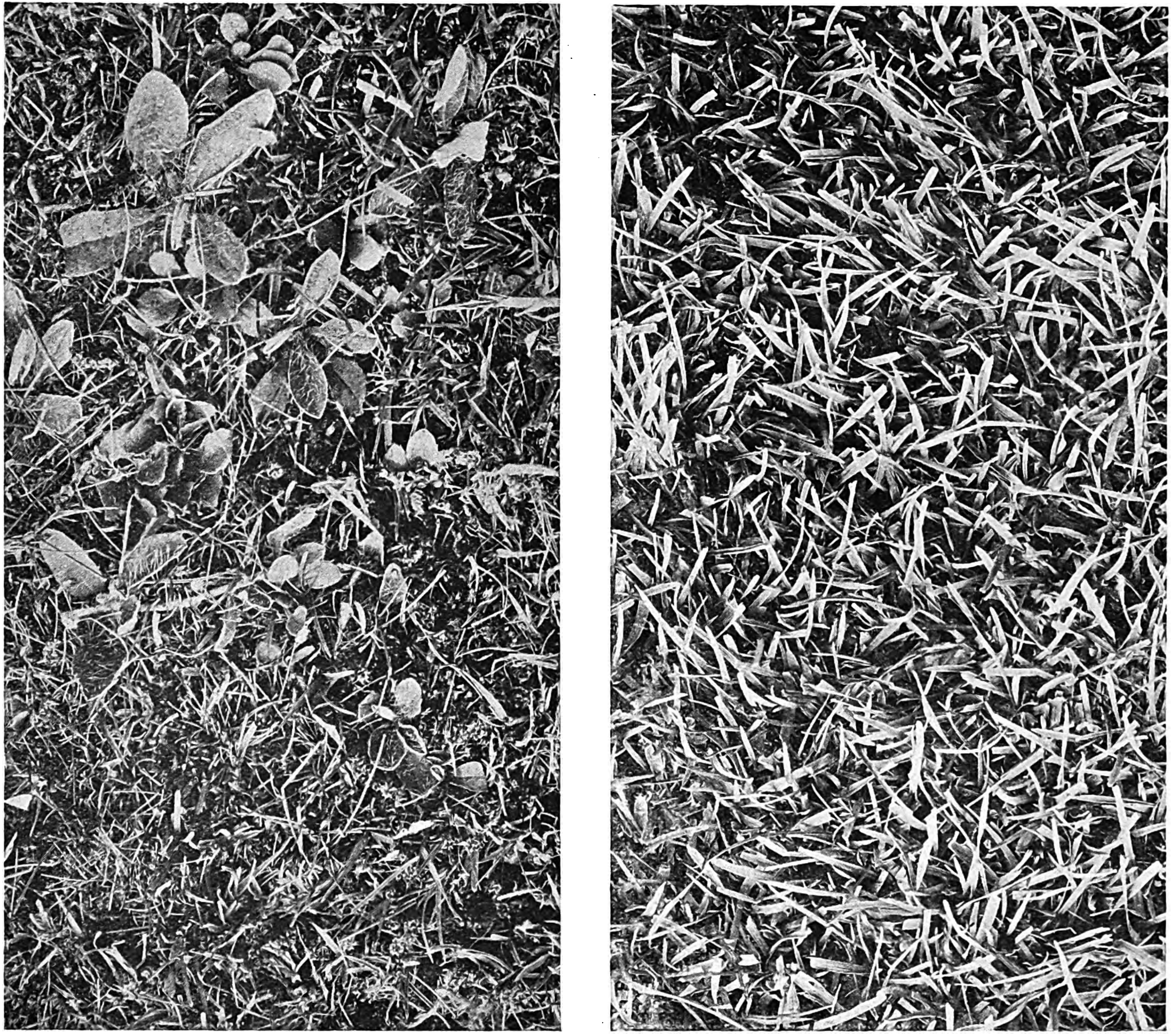

FIG. 193.—TREATMENT OF GOLF GREENS.
Left, grass untreated; right, the same turf after treatment with sulphate of ammonia (see p. 407).

Early-flowering Chrysanthemums at Reaseheath.—At the Cheshire School of Agriculture, Mr. W. E. Shewell-Cooper has arranged a further trial of early-flowering Chrysanthemums. One bed, 200 feet by six feet, contains eighteen of this season's novelties and eighteen of the best of the new varieties of 1927. Another bed, 160 feet by 45 feet, will be devoted to experiments in disbudding, while in a third bed, 150 feet by 6 feet, manurial tests will be made. Altogether, the series of trials consist of about six thousand plants.

Appointments for the Ensuing Week.—MONDAY, JUNE 11: United Horticultural Benefit and Provident Society's meeting. WEDNESDAY, JUNE 13: Sheffield Chrysanthemum Society's meeting. FRIDAY, JUNE 15: Manchester and North of England Orchid Society's Annual Meeting.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Horticultural Society's Garden, Turnham Green.*—At no period of the year, perhaps, should a garden look better than about the third or fourth week of May; but, owing to the lateness of the present season, the various flowering trees and shrubs which are usually then in full beauty will be little more than in perfection by the second week in June. Although the American garden now begins to look gay with the earlier and better kinds of Rhododendrons and hardy Azaleas, yet the great masses of these showy plants, scattered here and there throughout the arboretum and elsewhere, may only be expected to be in full bloom about the next great show day, on the 11th instant. As we have mentioned the American garden, we may state, however, that the rock work at its entrance could not possibly be gayer than it is at present with yellow Alyssum, great patches of the white Iberis Gibraltarica, the purple Aubrietia deltoidea, and the sweet Dianthus suavis will also soon be a mass of fragrant flowers. The new orange and scarlet Aquilegia californica was likewise in blossom here, and a charming plant it makes for rock-work, being strikingly showy and distinct, not only from other Columbines, but also from most other plants. Among Rhododendrons was the new Californian one, with handsome pink flowers, and foliage not unlike that of a Magnolia. Prince's Bianca (yellow), Victoria, and Blanche Superb were also conspicuous kinds, the latter being probably one of the best whites at present in cultivation. The excellence and hardiness of Mr. Pince's Rhododendrons deserve especial notice. The Paeony called Rinzi, which is a grand addition to Moutans, was also in bloom. Its huge flowers are very double, and a good purplish-pink. Among Mr. Fortune's Moutans, which were also in blossom, the best are atrosanguinea and atropurpurea; the latter is a bright purple, and the former, though not very double, is invaluable, on account of its deep blood-red colour. As to the hardiness of new trees, we may mention, before leaving this department, that Acer villosum has stood the winter, uninjured, on a bank, and so has the East Indian Horse Chestnut (Pavia indica). *Gard Chron., June* 4, 1853.

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven Moore, Manchester.

Cattleya citrina.—This beautiful and fragrant Orchid is now developing flower buds, and an increased supply of water at the roots may be given, although this should not be excessive. The plants succeed when secured head-downwards to a block of wood or a Teakwood raft, where a little A.1. fibre and Sphagnum-moss may be fastened with the plant. They should be grown in a light, airy position at the cool end of the intermediate house; plenty of atmospheric moisture is required, and frequent applications at the roots during the growing season. When growth is complete no water is required for several weeks.

Bulbophyllums.—Members of this genus are cultivated in increasing numbers each year. The flowers are singular and interesting in structure and are finely coloured, as in the strong-growing, attractive species, such as B. Ericssoni, B. virescens, B. Fletcherianum and B. Reinwardtii. These thrive when grown in the warm house, together with the smaller-growing B. lemniscatoides, B. grandiflorum, B. barbigerum and B. tremulum. The free-flowering B. Careyanum, also B. Dayanum and the hay-scented B. comosum, grow well in the intermediate house. These Orchids should be grown in pans or baskets suspended from the roof; they require a humid and buoyant atmosphere, ample supplies of water at the roots during the growing season, and shade from strong sunshine. The plants should not be allowed to remain in a dry condition for very long periods during the summer, and although less water is required during the winter, it is not advisable to subject the plants to very dry conditions. Many of the species do not require removing from their receptacles when in need of fresh rooting material if the old and sour compost may be removed easily. Those of a rambling nature may be made into compact specimens with the use of wire pegs, care being taken not to twist the rhizomes too severely for they are damaged easily. The drainage should be perfect, and the compost should consist of three parts A.1. fibre, one part Sphagnum-moss, and plenty of crushed crocks. The very dwarf species, such as B. barbigerum and B. pygmaeum, require very little compost about the roots, and should be grown in small shallow baskets or on blocks of wood; the usual care in watering newly-potted plants is needed.

Laelia pumila.—This dwarf, compact-growing species, with its varieties L. Dayana and L. praestans, are now producing their new roots, and repotting or top-dressing may now be done. Use well-drained, shallow pans. A small quantity only of compost is required, which may consist of three-parts Osmunda or A.1. fibre and one-part Sphagnum-moss; it should be pressed moderately firmly between the roots. These Orchids thrive well when grown suspended from the roof in the intermediate house and shaded from strong sunshine. Ample supplies of water are needed at the roots during the growing season and sufficient during the dormant period to keep the small bulbs in a normal state.

THE KITCHEN GARDEN.

By Allan Falconer, Gardener to the Cheadle Royal Mental Hospital, Cheadle, Cheshire.

Celery.—The maincrop, raised in frames, should now be hardened-off ready for planting in trenches prepared as advised previously. Select, if possible, dull, showery weather for this operation, and lift each plant with a good ball of soil; if the frames were prepared as advised for pricking out, the manure at the bottom of the frame should be well matted with the roots, and the soil should be watered well before lifting the plants. Place them in single rows if possible. The plants should be watered in well, and if the weather is very sunny it is an advantage to shade them lightly and to damp them overhead in the afternoon. They should be kept supplied with moisture, and when growth commences a light application of sulphate of ammonia should assist them. Attention should be given to spraying from the seedling stage onwards, at fortnightly intervals, as a preventive against leaf disease.

Exhibition Celery.—The early-raised plants that are growing in frames should now be hardened-off, the lights being removed permanently. The leaves may be supported with stakes and ties, and soot should be dusted over and around them at regular intervals, according to the weather. Plenty of moisture is essential, with occasional applications of liquid and artificial manures. Spray them with petroleum emulsion and Bordeaux mixture as a preventive against insects and disease, and dust Sanitas powder around the collar of the plant to prevent slugs attacking them. Bands of brown paper about six inches high, for blanching, should be placed around them about seven weeks before the show, and special attention is necessary to avoid crippling the centres.

Spinach Beet.—If sown in rich soil, this crop should be useful during the winter and spring months. Sow the seeds in drills fifteen inches apart, and thin the seedlings to nine inches. As it is rather a coarse vegetable it does not find much favour with cooks, but if passed through a fine-meshed sieve when cooked, it is equally as good as any other Spinach, and it is quite hardy.

Marrows.—Continue to plant these in all available situations; many unsightly places may be utilised for this purpose.

PLANTS UNDER GLASS.

By J. Coutts, Assistant Curator, Royal Gardens, Kew.

Gilia coronopifolia.—Seeds of this beautiful Californian plant should be sown about the middle of June in a cool greenhouse, and the young seedlings, when fit to handle, should be pricked off into pans or boxes. Later, they should be placed singly in sixty-sized pots, and during the summer should be kept perfectly cool. By the autumn they should be established in four-inch pots, in which they may pass the winter, when they should be kept close up to the glass in a cool, airy house, in a dry and buoyant atmosphere. In common with many Californian plants, it is very impatient of winter dampness, and water should be afforded very carefully, while it is also important to keep the foliage dry. Early in the spring they should be ready for transference to their flowering pots, which may be six or seven inches in size, according to the size and strength of the plants, and well-grown plants should attain a height of five to six feet, when they provide a very fine if somewhat fleeting display.

Rehmannia angulata.—Well-grown plants of this subject provide a prolonged display in the conservatory. They should be raised from seeds sown about the middle of June, and although any specially fine form may be propagated by means of root-cuttings, seeds saved from selected plants may be expected to come fairly true to character, as also does the white-flowered variety. As this plant is practically hardy it may be grown in a cold frame from which frost is excluded, and as the flower stems develop and require more head room they may be removed to a cool greenhouse. R. angulata is easy to grow in any good potting compost, and it may be used for summer bedding purposes.

Nerines and Lachenalias.—These, together with Freesias, Tritonias and other South African bulbous plants which rest during the summer, should, when their foliage has died down, be kept quite dry at the roots, in a cold frame with the lights on, fully exposed to the sun. While the smaller bulbous subjects should be shaken out, graded and repotted every year, the Nerines need not be repotted until it is really necessary, for they usually flower most freely when the pots are crowded with bulbs; repotting of the subjects mentioned should take place during August and September.

HARDY FRUIT GARDEN.

By T. H. Tomalin, Gardener to the Earl of Bessborough, Stansted Park, Emsworth, Sussex.

Thinning the Fruits.—Where a superabundance of fruits has set, it is important to relieve the trees by early thinning, otherwise the fruits may be undersized, and the growth of the tree may also suffer. This first thinning, however, should not be too drastic, but should be confined to the removal of misshapen or badly-placed fruits, and to those most crowded.

Apples.—These may usually be relied upon to thin themselves, more or less, at about the end of June, so that the final thinning should be deferred until early July. At the present time thinning should consist of removing misshapen fruits, and the removal of a few on the more congested parts of the trees.

Pears.—Pears are even more uncertain than Apples at the present stage, and, moreover, with these it is far more difficult to tell with certainty at this date which fruits will ultimately develop into the best specimens. The final swelling often presents a surprise in this respect.

Plums.—Plums and Gages often set their fruits so thickly that the tree is employed completely in trying to perfect an overcrop, with the result that little growth is made, and no fruit buds are produced for the next season. Drastic thinning should, if carried out wisely and in time, prevent this misdirection of energy, and should help to correct the tendency to biennial fruiting. Vine scissors may be used for removing the surplus fruits, and the trees should be gone over at intervals of a fortnight from now onwards, removing a few fruits at each operation. The final thinnings, removed just before ripening, may be utilised for making jam.

Apricots and Peaches.—Apricots are now at the stoning stage, and in a few day's time the final thinning of these fruits may be carried out. Where Peaches have set thickly it is a good practise to remove a few of the surplus fruits when the disbudding of the shoots is being done, leaving the final thinning until after the stoning period. At this period, when the stones are hardening, it is well to assist the trees by applying a dressing of freshly-slaked lime to the borders. This should be watered in well if dry weather prevails at the time.

Newly-planted Fruit Trees.—The fruits on young and recently planted fruit trees should be thinned in a much more drastic manner than those on established trees. The main objective is to form a good head of strong growths.

FRUITS UNDER GLASS.

By T. Pateman, Gardener to Sir Charles Nall-Cain, Brocket Hall, Hertfordshire.

Vineries.—The bunches of midseason and late Grapes should now be thinned for the last time. Good bunches of Grapes are sometimes spoiled through insufficient thinning of the berries; this is an error, for when the berries are crowded it is not possible for the air to circulate about them. Therefore, the work should be performed during the early stages of growth, before the berries become large, when it is impossible to thin them without spoiling the appearance of the fruits. The vines will, if in good condition, be making plenty of growth, and the usual practice is to stop them one joint beyond the previous stopping, but if space will permit, I prefer to allow them to make three or four leaves before stopping them again, to encourage root action; at the same time, I do not advocate overcrowding of the growths. The borders should never be allowed to become dry, and it may be wise to mulch them with well-decayed manure. With a little fire-heat at night it should not be difficult to maintain a minimum temperature of 65°.

Madresfield Court Grape.—Many growers of this variety experience difficulty with regard to the splitting of the berries. This is, perhaps, partly due to insufficient thinning of the berries and lack of water at the roots. This Grape should have ample supplies of moisture until the fruits have reached the ripening stage. Where this difficulty has been experienced, I recommend thinning the berries freely, so that each has sufficient space to develop. So soon as the berries begin to colour a little artificial heat may be afforded, and a circulation of air, both night and day, is to be recommended; this should keep the atmosphere moderately dry, and the berries should not be affected by sudden changes in the outside temperature.

Young Vines.—Vines that were planted this season should be encouraged to grow freely, to produce well-ripened and short jointed rods. Frequent light waterings are to be recommended, but these should be governed by the strength of the vines and the outside conditions. Young Vines should be stopped at intervals to cause the buds on the lower portions to develop and to enable the young rods to become well ripened. Syringe them vigorously to keep them free from red spider, but as the season advances this should be discontinued, and the floors only should be damped, at which season also air may be admitted more freely to promote the formation of firm, well-ripened growths.

THE FLOWER GARDEN.

By J. G. Weston, Gardener to the Duke of Devonshire, Chatsworth, Bakewell, Derbyshire.

Sub-tropical Plants.—Beds of these interesting subjects make a welcome change from the repetition of ordinary bedding plants, and if well arranged in a suitable position, rarely fail to be appreciated. The question of shelter from the prevailing winds enters largely into the suitability or otherwise of any particular site, but in any case, fullest exposure to the sun is necessary. The plants should be hardened thoroughly and are usually the last to be planted; as the majority of them have extremely tender foliage, it is unwise to plant them until all danger from late frosts is past. The soil should be sufficiently warm to enable the plants to commence root action, and subsequently top growth, without delay. Amongst the many subjects which may be used for this style of bedding are the Ricinus, or Castor Oil Plant, of which R. Gibsonii, and R. cambodgensis, the bronze-foliage varieties, are very effective. Some of the green-leaved varieties with red stems are also worth including. Melianthus major, the Honey Flower, is a capital plant, the glaucous-blue foliage being very noticeable, and if it is planted in a warm situation it may survive the winter. Cordyline indivisa, the Musas, Zea japonica variegata, Acacias in variety, Grevillea robusta, Abutilons, Solanum marginatum, Wigandias, and several varieties of Eucalyptus, of which E. globulus is one of the most effective, and the hardier Palms, such as Chamaerops Fortunei and C. excelsa, may also be used. For edging purposes or as a groundwork for the taller plants, the silver-leaved varieties of Centaureas, such as C. gymnocarpa and C. ragusina, or Cnicus diacantha, are quite suitable, also Perilla nankinensis. For very large groups or beds, space may be found for the best of the Japanese Acers, such as A. Negundo variegata.

The Herbaceous Borders. — Plants in this section are developing rapidly, and constant attention to thinning the growths and staking and tying is necessary at this stage. Staking should not be left until the growths are falling about. One can seldom remedy damage done by storms when this work has been overlooked, but much may be averted when timely attention is given. Individual plants should be staked according to their style of growth. Delphiniums, Lupins and Galegas, for instance, should be supported early. Many other occupants of the borders may be supported with twiggy pieces of Birch and similar brush-wood. In cases where these are used, the growths usually grow through the sticks, and when the plants are fully grown, the supports are hidden.

FOR NORTHERN GARDENERS.

By A. T. Harrison, Gardener at Jordanhill Training Centre, Glasgow.

Potatos.—The later varieties of Potatos are now growing rapidly, and so soon as the rows are clearly defined, the soil between them should be stirred or cultivated deeply, breaking it up as fine as possible. If artificial manures were not applied at planting time, and the soil is known to be in a poor condition, these may be applied now before the soil is stirred, working them in during the process. On some heavy soils it is impossible to reduce the surface to a reasonable condition while dry weather ensues, but the first opportunity after rain should be taken to cultivate the soil. When the haulms are from nine inches to a foot high the soil should be drawn up to them, either with a draw hoe, or with a double moulding plough.

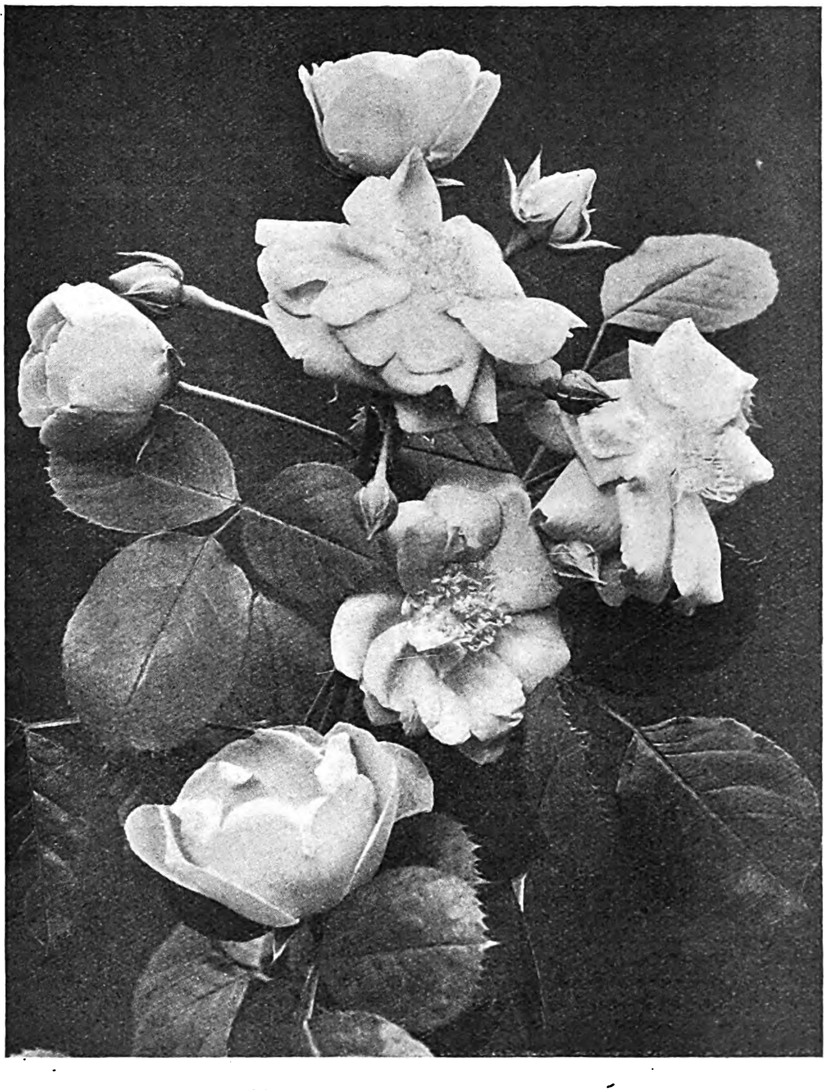

FIG. 194.—ROSE CHAPLIN'S PINK CLIMBER.
(see p. 412).

Marrows.—Plants from seeds that were sown under glass about the beginning of May should now be ready to plant out, and in cold districts they should have the protection of a handlight or cloche at night for a week or two after planting. Precautions should also be taken to prevent the young plants being twisted or broken by the wind, by pegging them down securely so soon as they have commenced to trail along the ground. In very dry districts it is better to grow them on fairly large mounds of manure and decaying matter, so that the roots of the Marrows may have abundant food and never suffer for lack of moisture. In moist districts these mounds are not so necessary, and good crops may be grown on any well enriched soil, such as that recently occupied by the early Potatos.

Planting Vegetables.—Now that the plants sown out-of-doors are large enough to handle, they should be planted without delay, and if the soil has been well prepared and measured previously, and drills drawn to mark the rows, the setting-out of large numbers of Brassicas may be performed expeditiously. Brussels Sprouts, late Cauliflowers and Savoys should be dealt with first, after which early varieties of Cauliflowers, Cabbages and Borecole may be planted. Where Lettuces are in constant demand further beds of these should be made of the seedlings from sowings made during April, and by leaving the plants in the original seed rows five to six inches apart when thinned, they should be ready for use three or four weeks earlier than the transplanted seedlings. Further sowings of Lettuces and Radishes should be made at once, and if Onions for pickling are required, these may be sown now, thickly, for the aim is to produce small, silver-skinned bulbs. The seedlings should be protected from the Onion fly by repeated sprayings of strong-smelling insecticides, or weekly dustings of soot and lime; the bulbs should be harvested early in autumn.

INDOOR PLANTS.

PLATYTHECA GALIOIDES.

A GENERATION ago this useful subject was known more generally as Tremandra; it is a beautiful greenhouse plant, previously very popular and grown in quantity for market, but at the present day it is seldom seen in gardens.

P. galioides is a very elegant and graceful plant, which produces its blue flowers in great profusion. It may be propagated now, and again in autumn, by means of the slender, twiggy side-shoots, which should be inserted in pots of sandy peat, made very firm, as for South African Heaths. After watering, the pots should be stood under a bell-glass in a cool greenhouse. When rooted, the young plants should be potted carefully into small pots, in a compost of sandy peat, taking care not to injure the very fine roots. The plants require frequent stopping to ensure a bushy habit; pot them on as they require it, but take care not to over-pot them. As the plants increase in size a rougher compost of sandy peat may be used, with perfect drainage, and care in watering is necessary at all times. A light position, well up to the roof-glass, in a cool and airy greenhouse, should suit them. After flowering, the slender shoots should be cut back.

ROSE GARDEN.

CHAPLIN'S PINK CLIMBER.

THIS beautiful climbing Rose (see Fig. 194) was awarded a Certificate of Merit at the Spring Rose Show of the National Rose Society (see p. 301).

Judging by the group of plants that was arranged at that Show by Messrs. Chaplin Bros., and also by the several fine specimens which formed the centre, and possibly the chief attraction, of their fine exhibit at the Chelsea Show, this vigorous, graceful and free-flowering Rose well deserved the honour that was bestowed upon it.

It is said to be derived from American Pillar and Paul's Scarlet Climber, and is described as a hybrid Wichuriana; the foliage is handsome, and the rather large flowers are soft pink, with a central cluster of golden stamens. *F.*

EARLY WILD ROSES.

ROSA Hugonis is always the first of the genus—if we may except the tiny R. Roulettii—to come into flower here, its elegant branches being wreathed with their bright yellow blossoms early in May. There are few, if any, yellow wild Roses of spring to equal this delightful subject in the elegance of its foliage and habit, and the charm of its dainty blossoms, and it is a shrub which does singularly well even in the dry, thin soil of rocky hillsides. In this respect it resembles the Burnets which flower a little later. May frosts are liable to injure R. Hugonis, and last year every bud and blossom was destroyed here.

The quaint, cross-shaped, four-petalled, white blossoms of the old R. sericea (including its curiously spiny form, R. s. var. pteracantha) appear at about the same time as those of R. Hugonis. R. Willmottiae is equally early, a strong, robust grower, sending up stout branches to a height of eight or more feet. Both the neat, little Burnet-like leaves and young growths of R. Willmottiae are covered with a glaucous hue which makes a most attractive setting for the clear, rose-purple flowers. These blooms, which are borne in the greatest profusion on the graceful, slender twigs, are about one-and-a-half-inch in diameter, and there is a peculiar brightness in their tint which renders them very distinct. R. Willmottiae is an exceedingly spiny shrub, and one that needs and deserves lots of elbow-room. It also, like the foregoing, is quite amenable to culture in soils which would be considered hopeless for the average hybrid Rose.

Another Rose which promises to be well worth a good place among these early species is labelled F. 9,008. A young plant of this has, so far, not exceeded three feet, but it is making indications of growing very much taller. The slender, arching branches, bristling with crimson spines, are densely furnished with small leaves of a bluish green, the little, sharply-pointed leaflets being in six pairs. Although a vivid crimson in the opening bud, the bowl-shaped flowers are white and about one inch across. This species is also rather susceptible to spring frosts.

R. alpina always opens its first blossoms during early May. This is a delightful species for thin woodland or sunny banks. It is a fairly strong grower, making branches of three or four feet in a season, but in good soil it may attain double that stature. The entire shrub is devoid of prickles, save, perhaps, a few minute ones on the mid-rib of the leaves, or at the base of the branches. The foliage, slightly downy, is a pale, soft green which affords a fine setting for the vivid, crimson flowers, with their very conspicuous clusters of golden anthers. These blooms, which are one-and-a-half inch across, are followed by bottled-shaped, scarlet fruits which, with the clear yellow of the autumn foliage, make a remarkably pleasing combination. R. alpina is a useful and attractive subject for dry, thin soils. *N. Wales.*

HARDY FLOWER BORDER.

PHYTOLACCA DECANDRA.

KNOWN under such names as Virginian Poke-weed, the Red Ink Plant and Pigeon Berry, P. decandra has been widely cultivated for many years, for we learn that Parkinson grew it in his garden, and that it is to be found naturalised in Spain, Portugal, Switzerland and Jamaica. The same authority, *i.e.*, *Botanical Magazine*, t. 931, describes how that at one time it was grown extensively in Portugal and that the berries were used for deepening the colour of red port, until the wine merchants complained that it spoilt the flavour of the wine and the Government ordered the plant to be cut down everywhere before the berries ripened. It is also suggested that the leaves were boiled and eaten as Spinach, and that the roots are used medicinally in America.

It is a robust-growing perennial not often seen in gardens at the present day, but not an unattractive subject for the large herbaceous border or the wild garden, for it requires plenty of room. The roots are large and fleshy, and are apparently poisonous, while the erect-growing stems, branched at the tops, are often considerably more than three feet in height; they are furnished with ovate, petiolate leaves, and bear long racemes of white flowers from July onwards.

These flowers are followed by closely packed spikes of rich purple berries, which form the real attraction of the plant; they are filled with a crimson juice and are relished by birds.

P. decandra may be regarded as a good perennial, although it dies out occasionally during the winter; it is very accommodating and flourishes in deep, rich soil. *Kent.*

TREES AND SHRUBS.

CYTISUS SULPHUREUS.

THE well-defined character of this subject should make it more common; but although it has been known for fifty or more years, it is not popular. It flowers at the same time as the common species, and when seen against a background of dark-foliaged subjects, this sulphur-coloured Broom is most striking. The flowering sprays are stiffer than those of the type, while the glossy and uncommon yellowish hue of the blossoms has earned for it the name of the Moonlight Broom. It is a variety of C. scoparius, and may be increased by cuttings.

CUPRESSUS LAWSONIANA ERECTA VIRIDIS.

THIS is one of the best of the Cypresses for grouping, or for planting singly where space is strictly limited. Its compact, upright habit makes it particularly useful, while the bright green leafage adds to its value. It is peculiarly fitted for planting in small pleasure grounds, because it does not need great space to show the full beauty of its development. For those who have room for such grouping, a plant or two of Cupressus Lawsoniana lutea, a fine, golden, variegated form, would associate well with the first-mentioned. Both may be increased by cuttings placed in a cold frame; planting should take place in early autumn or spring. *C. T., Ampthill.*

PIERIS FORMOSA.

ALTHOUGH this species, in common with most of its kind, forms its buds in autumn for flowering the following spring, last winter's frosts, which were severe enough to destroy several inches at the tips of the uppermost branches, did not seriously affect the crop of blossom. It is difficult to account for this, especially when one recalls the fact that lighter frosts in past winters have practically destroyed every bud.

P. formosa is the handsomest of its genus, making a large bush up to eight feet or more in height. The lanceolate leaves, some five to seven inches long, are a rich, glossy green and of firm texture. The flowers first appear here about mid-April, and continue to nearly the end of May. They are borne in great profusion in bold clusters of panicles at the ends of the previous year's growths, and while these panicles are held more laterally than those of the familiar P. floribunda, they do not droop so much as do those of P. japonica. Individually, the blooms are pitcher-shaped, rather above a quarter-of-an-inch in length, and pure white. When flowering is ceasing the new growth is commenced, and the leafy tufts put forth at the ends of the branches are of such a bright and glistening mahogany-red, approaching vermilion, that P. formosa would be well worth a place for the ornamental value of these alone.

P. formosa, once known as Andromeda formosa, is a native of the Himalayas, but it appears to range into China. Although generally considered a peat subject, I find that it does admirably in a light, lime-free loam, even in places which often dry out during the summer. *A. T. J.*

BOG AND WATER GARDEN.

APONOGETON DISTACHYUM.

THE Cape Pond Weed, or Water Hawthorn, which latter appellation has been applied to it on account of its Hawthorn-like fragrance, which is especially noticeable on warm, sunny days, is a useful aquatic subject for the furnishing of large ponds or lakes; it is, perhaps, of too spreading a nature to employ in small ponds where choice Nymphaeas are grown.

As its popular name implies, A. distachyum comes from the Cape of Good Hope, and was introduced to this country in 1879, since which date it has become naturalised in several places. It should be introduced to the pond by planting small pieces in pots, which should then be submerged; they should soon establish themselves, and no further care is needed.

A. distachyum is a fibrous-rooted subject, producing long-stalked, oblong or linear, flat, floating leaves, while the flowers are borne in twin spikes; there are no petals, but the creamy-white, oval bracts are responsible for their attractiveness. It is absolutely hardy, and produces flowers abundantly throughout the summer months, often in such profusion that their perfume may be detected some considerable distance away.

There is a variety named Lagrangei, with which I am unfamiliar, but it is apparently a beautiful form, the bracts and under-sides of the leaves being violet-coloured.

HOTTONIA PALUSTRIS.

THE Water Violet, as this aquatic subject is termed, is to be found scattered throughout central and northern Europe, and is not uncommon in these Isles, but this fact should not debar it from cultivation in gardens where suitable accommodation is available. Why it should be termed the Water Violet is difficult to understand, for its resemblance to a Violet is rather obscure; it belongs to the Natural Order Primulaceae, and the deeply cut flowers more nearly resemble those of the Primrose than the Violet.

It is a perennial, and under natural conditions is to be found growing in pools and water-filled ditches, but equally attractive effects may be obtained from plants growing in moist, muddy ditches; it does not of necessity have to be submerged. It increases and spreads quickly by creeping stems, and when growing in water the stems, which are clothed with deeply pinnatifid leaves, are entirely submerged. The leafless flower stems rise out of the water to a height of eighteen inches or more, and on them are borne, during early summer, whorls of short-pediceled, pale lilac-purple flowers, which are really attractive.

H. palustris is a useful subject for the bog or water garden, although, perhaps, it is inclined to be too rampant for small ponds or bog gardens of only moderate size, but in moist ditches it forms tufts of deep green foliage from which the several flower stems are produced.

SENECIO CLIVORUM.

This Senecio is often suggested as a suitable subject for herbaceous borders, but there are few borders in which it may be grown really successfully; it is in moist positions on the margins of ponds or lakes that it may be planted to the best advantage.

It is a handsome subject of large dimensions, and it is only when planted boldly in masses that a really striking and imposing effect is obtained. The leaves are large, heart-shaped and rich, glossy-green, and above them tall, unbranched stems rise, bearing, during late July and August, large, orange-yellow, brown-centred flowers.

Naturally, a plant of such size requires liberal treatment; the soil should be dug deeply and enriched with quantities of decayed vegetable matter. It does not object to sunshine so long as its roots may obtain plenty of moisture, but when planted in borders where the water supply becomes short during dry spells, it takes on a very bedraggled appearance, and becomes an eyesore instead of a subject of imposing beauty.

Senecio Clivorum has not been long in cultivation, but it is not difficult to obtain, for it may be raised in quantities from seeds, which are usually produced freely; it is also increased easily by division. This Senecio was introduced by Mr. E. H. Wilson, and is a native of China. *M. W., Kent.*

ALPINE GARDEN.

PYXIDANTHERA BARBULATA.

The subject of this note is a minute North American evergreen, closely allied to Diapensia, which attracts attention more by reason of its rarity than by its value as a decorative garden plant. Plants have been imported often, but whether they have been of long duration is doubtful, and plants raised from seeds or cuttings would probably have longer life.

P. barbulata (Fig. 195.) grows wild in the Pine barrens of New Jersey and Carolina. It does best in open, sunny spots in pockets of moist, sandy soil, containing plenty of vegetable matter, where it forms a mat of small, dark green and reddish leaves, studded with great numbers of small starry, pearl-white flowers and rose-pink buds. The generic name was given in allusion to the form of the stamens, which open, like little boxes, by transverse lids. *N. K. G.*

POLYGALA CALCAREA.

This is by a long way the most beautiful of our native Milkworts, and a plant that is well worth a place in the rock garden. P. calcarea is a semi-procumbent species of frail and slender growth, the delicate stems being sparsely furnished with oblong or lanceolate leaves. In my light, dry soil it is a subject for planting closely in association with the smallest and choicer plants in a sunny position. It does not cover a space of more than three or four inches, and is somewhat shy and unobtrusive, but when bearing its brilliant Gentian-blue flowers there are few herbs of its size and colour so strikingly beautiful.

P. calcarea, as the name implies, is a lime-lover, and as a local species has a wide European range. Like most of its race, it is apt to vary to pink or white, but the typical blue is incomparably the best. It is often in flower so early as mid-April, and a succession of blossom is maintained for at least two months. *J.*

OENOTHERA TARAXACIFOLIA.

Of distinct habit, this Oenothera is well suited for cultivation on the rock garden, and its beauty of flower commends it to the alpine gardener, although it is not so easy to grow, at least, to retain throughout the winter, as many of the better-known perennial Evening Primroses.

It should be planted in a sunny position, in a place where its prostrate growths, up to about one foot in length, may trail over a ledge or rock. The leaves are in appearance similar to those of a Dandelion, and are five inches or more in length, while the large, long-tubed flowers are from two to three inches in diameter, white upon opening and changing to rose with age.

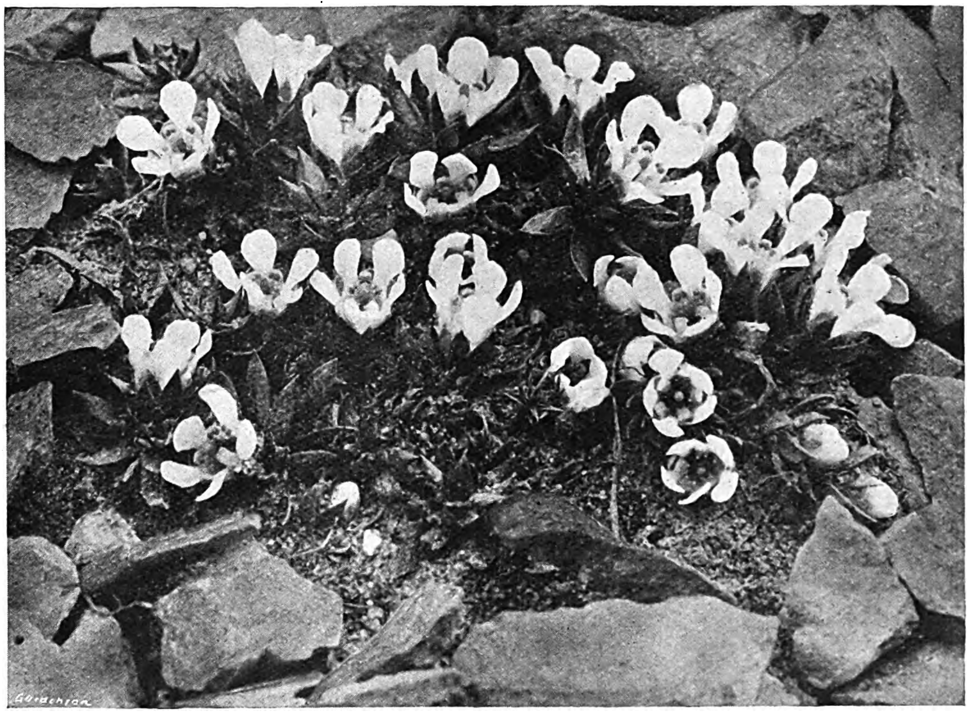

FIG. 195.—PYXIDANTHERA BARBULATA.

The correct name of O. taraxacifolia, according to several authorities, is O. acaulis, but these authorities do not seem to agree, for the late Reginald Farrer, in his well-known *English Rock Garden*, dismisses O. acaulis by stating that it "has yellow flowers, lonely on stems of six inches or so," so that one, not professing to be an authority, is obliged to resort to the name by which it is more generally known. *W.*

WAHLENBERGIA SERPYLLIFOLIA.

To wander into the garden during the present season is to experience a high and fresh feeling of enjoyment in seeing some cherished flower open once more to the winsome time when the early flowers respond to the wooing of the advancing year. Writing this on May 17, I was delighted to find that Wahlenbergia serpyllifolia had opened its first flowers for the year, and it came as a pleasant surprise that it was so early, as June is usually the time of its flowering, and it is a welcome sight to see a bloom like this open so soon. Here, it is hardly cultivated on the orthodox method of planting in full sun in rich loam and lime, but is grown in a whinstone moraine, and in a part where there is no calcareous substance. It was the only place available when it came to me, and the introduction of lime might have endangered the lives of some lime-haters already there.

As do many other plants, it has accommodated itself well to the absence of calcareous treatment and is thriving and blooming well, giving its rich violet, open bells, on their purple stems above the neat leaves, as if it were quite satisfied with the fare it has received. The sunny position it certainly has, and appears to relish, while during the dry weather of April, when we had only about sixty per cent. of our average rainfall, it shared with other occupants of the moraine good soakings of water at frequent intervals in the month.

It is a distinctly charming plant, most abundant in nature in Bosnia and Servia, and attracting much notice with its hairy-fringed, small leaves, and rich violet flowers. It is propagated by seeds or cuttings. *S. Arnott.*

LIPPIA NODIFLORA.

The usefulness of this prostrate, creeping subject on the rock garden is not generally recognised, for, although its flowers are by no means brilliant, they are produced abundantly at a season of the year when few other plants on the rock garden are in bloom. It forms a dense carpet of leafy growths which produce roots at the nodes, the small, compact heads of flowers, on slender stems two inches or so high, being white, sometimes tinged with lilac or pink. The leaves are opposite, up to one inch in length, broadened and toothed towards the apex.

Lippia nodiflora is a native of America, but it should not be considered completely hardy, for which reason it is advisable to winter a few stock plants in a cold frame; these may be secured easily by severing portions of the rooted growths and potting them in a light compost in small pots.

When growing wild, L. nodiflora is found, apparently, on river banks and in other damp places, but I find that the best results are obtained by planting it in sunny positions, in soil that is of a light and not too rich a nature; under such conditions it flourishes and flowers abundantly, but with me it seldom, if ever, survives the winter, and planting annually during the spring is the most successful method of effecting its culture. *Kent.*

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MR. F. KINGDON WARD'S TENTH EXPEDITION IN ASIA.

I—Into the East.

After a good voyage lasting only a fortnight, we landed in Bombay on November 15, 1927, and left by train for Calcutta the same afternoon. Immediately we were introduced to one of those abrupt contrasts for which India is notorious. Leaving the narrow strip of coastal shelf, all green and fertile, thanks to its ninety inches of rain, we began the ascent of the Western Ghats, and before the sun had set were passing between the high, blunt bergs which mark the gateway to the Deccan. Then, in the short twilight, with the jagged peaks glowing violently behind us in the last rays of the sun, we ran smoothly out on to the great, raw, Deccan plateau. Here everything was burnt up. There were no trees, only scrub and the harsh lava soil was little cultivated. Vast stony areas resembled desert, khaki-coloured, without a blade of green, until night shut out the scene. And so across the great Indian peninsula, ever changing. On the third day, we entered the industrial area of Bengal—coal mines, iron works, with long plumes of black smoke drawn across the sky; and at one o'clock, after a journey of forty-seven hours, we reached Calcutta.

Some of my kit which had been sent round by sea not having been unloaded yet, we spent five days in Calcutta, making final preparations, purchasing things in the bazaar, and cultivating the ground ahead. Then, on the 22nd, we left Calcutta by the Assam mail, and at noon on the following day found ourselves crossing the Brahmaputra by the ferry, to Gauhati. Now the plains of eastern Bengal were left behind, and we entered the Assam valley; to the south of us lay the Khasia Hills, and occasionally we caught a glimpse of the Himalayas to the north. The train rocked along the single track, narrow-gauge railway through some of the thickest jungle imaginable. Wayside stations were few and far between, tiny oases lost in a surging ocean of green jungle. We were due at Manipur Road about 11 o'clock at night, but the Assam mail is not particular to an hour or two, and it caused us no surprise when we were decanted at half-past midnight; luckily the dâk bungalow is alongside the station.

This was not my first visit to the Naga Hills. In the early summer of 1918, I had spent a fortnight's leave there, and climbed Japoo, the highest peak, so that I knew the way. But in those far off days there were no lorries on the road, and unless you had a car of your own, you dumped your kit in a bullock cart and walked, or rode a pony; and it took four days to reach Kohima. Now there are nearly a hundred lorries running the 135 miles between the Assam railway and Manipur State; one can go right through in a day, although it is better to break the journey at Kohima, forty-seven miles. The road is too narrow and winding for two cars to pass each other, so the one way traffic is controlled by gates at certain points, and cars must leave the control points by a given time. The few bullock carts which the coming of the car has left travel after dark.

On the 26th we went up to Kohima. It was a beautiful day, and for the first time we could see the Hills from the plain; for so heavy was the mist that night, that by six o'clock next morning it was dripping heavily from the trees like manna, leaving the sky clear. The whole jungle was drenched. We soon left the level, and began the long ascent; the gradient is easy, but the hair-pin bends and S-curves make the road dangerous. Signals to motorists are freely sprinkled, but the native lorry drivers pay scant attention to them, and accidents are rather common, although they usually take place on the flat plain; some of the notices are quaint. Thus one states: "Beware of falling stones. Don't stop to admire the scenery, but cut through quick." At every control gate is a large notice decorated with a white skull and cross-bones on a scarlet ground, and beneath this piratical design the legend: "Do you know the rules of this road? If not ask the Time-keeper!"

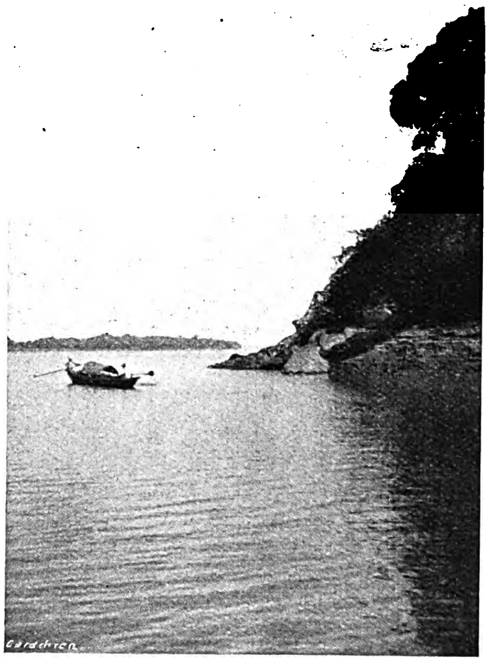

FIG. 196.—THE BRAHMAPUTRA AT GAUHATI.

We reached Kokima in the afternoon. It is a straggling tin-house station, built on either flank of a narrow saddle, at an altitude of 4,800 feet, and overlooked by Japoo (10,000 feet) a few miles to the south. But although the bazaar is hideous, the residential end has been well laid-out and planted with a variety of trees. There is even a neat public garden, and a sort of lover's walk through a plantation, and there is the Deputy Commissioner's garden.

The commonest planted trees are Grevillea robusta, Cupressus macrocarpa, which grows well without growing big (at least it has not yet), and Cryptomeria japonica. Pinus Khasya may also be said to be planted at Kohima; for although indigenous to the Naga Hills, it has long since been cut down in the Angami country, and never reappears where there is permanent cultivation. Probably Alnus nepalensis, which is the commonest tree in the secondary growth, keeps it out.

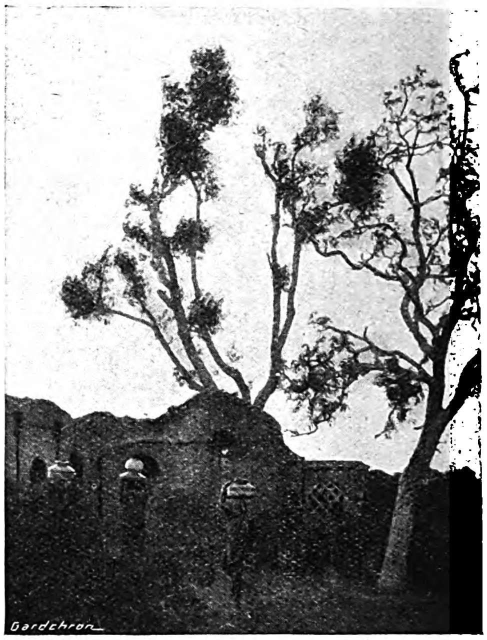

FIG. 197.—ENTRANCE TO A VILLAGE IN THE DECCAN.

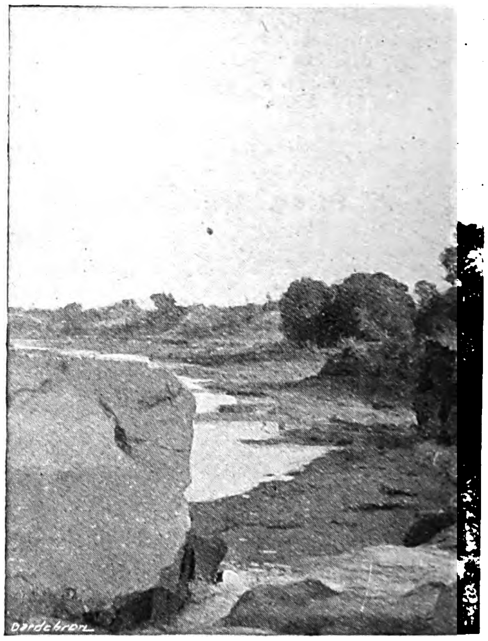

FIG. 198.—A RIVER OF THE DECCAN FLOWING ACROSS THE LAVA PLATEAU.

Other trees met with in Kohima are Eucalyptus, Sago Palm, Betula cylindrostachya (alnoides), Schima Wallichii, Castonopsis tribuloides and Engelhardtia spicata, the last four being indigenous. There are hedges of pink Roses, flowering all through the cold weather, Poinsettias, Bougainvilleeas, Hibiscuses and Almond trees, which on Christmas day were like pink clouds. In the several gardens of the three or four European residents there are many Orchids hanging from the trees, clumps of vivid Cannas, Iris Wattii (a local species), Rhododendron arboreum also local, and R. indicum, which I did not see wild; Hedychiums, and big bunches of Bamboo. The commonest hedge-forming plants are a bullet-headed Euphorbia, and Datura, the latter abundant in Naga villages. The Indian Mulberry ripens its small fruits in Kohima. Everyday Orchids are Vanda coerulea, Coelogyne cristata, Aerides Vandarum, Renanthera Imschootiana, various Cymbidiums and Dendrobiums.

The Manipur road winds itself round the Japoo range. Looking across the valley from the far side of the saddle, one sees white arcs of road, plunged at either side into the green forest. The opposite side of the saddle rises in a low hill crowned by the native village of Kohima, with its 500 houses. 'New' Kohima straddles the ridge and sprawls jerkily down either side. Down both valleys, which dip sharply from the saddle, one sees an endless succession of Rice terraces, neatly carved out of the hillside, and surrounded by secondary jungle. Almost the only virgin forest left in the district is that which covers the flanks of the Barrail range, culminating in Japoo.

Kohima has a very pleasant climate. The rainfall is heavy, about ninety inches, most of it falling in the summer; but then it is better to be in the hills than on the plains! November to January is delightful, and not a drop of rain fell during the six weeks I was there, although there is rain usually at Christmas. After January there may be rain every month, interspersed with fine weather. The head of the Assam valley is just a funnel into which all the dirty weather down below is sucked; thus the Sadiya district rarely goes long without rain. The Naga Hills are sufficiently far south and west to miss this fate, nor are the mountains high enough to attract much winter rain. Heavy dew keeps the forest moist and green, and the sun shines all day. There is little cloud, and often the hills are sparklingly clear while the plains are steeped in mist. The temperature is very steady; the average minimum shade temperature, November 26 to January 12 was round about 40° to 45°; the average maximum was 60° to 64°.

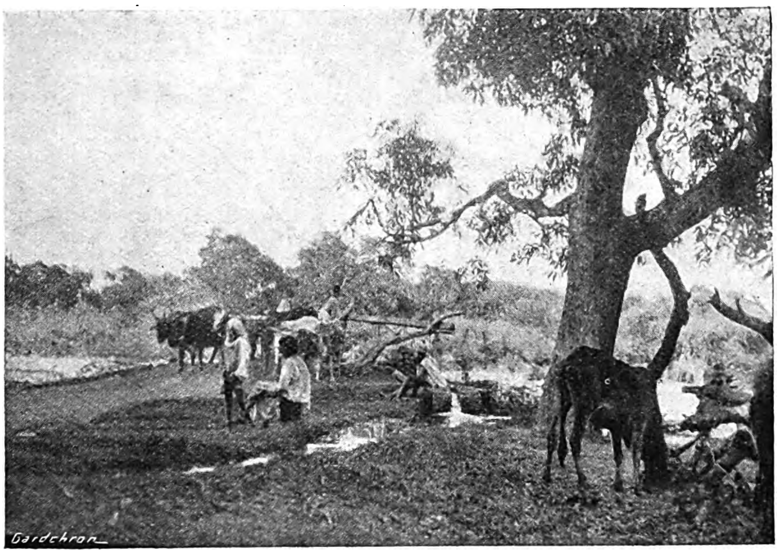

FIG. 199.—A SUGAR PRESS IN THE DECCAN.

For information on the flora of the Naga Hills one has to go back to the 'eighties of last century, to the days of C. B. Clarke and Sir George Watt. In the *Journal* of the Linnean Society, Vol. XXV, 1887, there is a list of the plants collected by Clarke in the course of a journey from Golaghat via Kohima and 'Munneypore' to Cachar, during October and November, 1885. I had made an abstract of Clarke's paper, for reference. He collected 1,050 species of flowering plants and Ferns, and estimated this at "probably less than one-fifth of the whole flora of the tract traversed." The trip covered a variety of country—the Brahmaputra valley, Naga Hills, Manipur valley and Cachar Hills. Excluding Ferns, Clarke collected perhaps 350 species of Phanerogams in the Naga Hills alone, and he was there about six weeks earlier than I was. Of course, he collected a number of species from lower down, having walked up by the bridle path—there was no cart road in those days!

"The principal phytographic result to be deduced from my Kohima visit," he wrote, "is that the Himalayan flora at this point crosses the Brahmapootra valley to the southern side of Assam . . . the magnificent Yunnan collections now in the hands of M. Franchet are a further eastward extension of the same character of flora." (*op cit.*)

FIG. 200.—A TYPICAL DECCAN TOWN.

Sir G. Watt came to much the same conclusion. In the *Indian Forester*, Vol. XIV, Nos. 7, 8 and 9 (1888), he observed: "A remarkable Sikkim type of vegetation gets more and more developed as the traveller wanders northwards along the western ranges of Manipur; and the appearance of so striking a tree [Wightia gigantea] may be viewed as the most southern indication of this feature of the flora." The wording of this last sentence does not completely obscure its meaning. Unfortunately, the plants collected by Watt in the Naga Hills were at his request excluded from Clarke's list, with the result that from thirty to forty years elapsed before some of the Rhododendrons were taken up by the late Sir Isaac Bayley Balfour, and Hutchinson; and other descriptions of new species appear to be completely scattered.

I know of no other extensive botanical collections from the Naga Hills, although, of course, there are some classical herbaria (Wallich, Hooker, etc.) from the Khasia Hills not very far away, and Griffith's collections from north and west of Kohima.

My aim, therefore (in addition to collecting Orchids), was to collect any plants I could find which Clarke had missed, with a view to testing his conclusion; I had, indeed, already come to the same conclusion, only that in his statement I would leave out 'at this point.' At the outset I decided to climb Japoo in order to secure seeds of the beautiful Rhododendron Macabeanum. I had climbed Japoo before, in June, 1918, when I found a pretty 'Triflorum

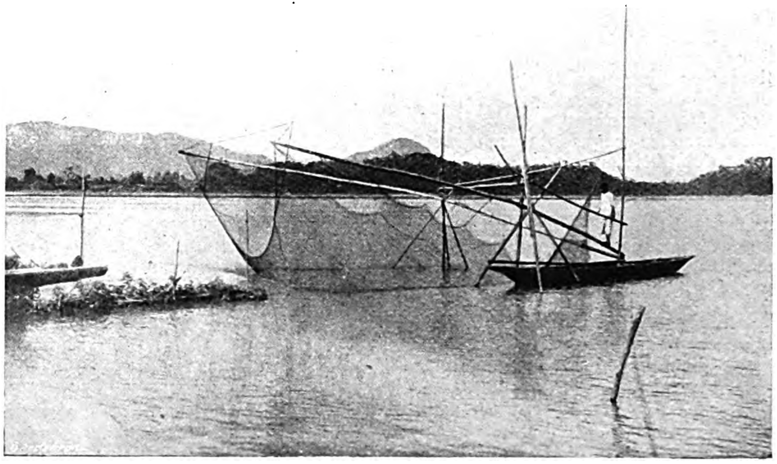

FIG. 201.—FISHING ON THE BRAHMAPUTRA, ASSAM.

Rhododendron in bloom; seeds of that were also desirable, as the species does not seem to have been collected previously—my own specimens are in the Edinburgh herbarium, and so far as I know, have not been dealt with. On November 30, therefore, I set off on the expedition, having with some difficulty secured six Serva coolies who, for extra pay, promised to spend three nights on the Japoo ridge. We followed a different route to that of ten years ago, ascending by a spur instead of by a valley. Luck, however, was against me, and the only cloudy spell experienced during the six weeks spent in Kohima came during this expedition. I was fortunate, indeed, not to have had rain. *F. Kingdon Ward.*

TERRESTRIAL ORCHIDS OF THE MALAYAN PENINSULA.

Although a number of Orchid enthusiasts have passed away during recent years, there are still many keen cultivators of this interesting genus, who are ever on the look-out for new species. The terrestrial Orchids of Malaya have received much attention from growers in Europe, and several beautiful hybrids have been raised. One of the first hybrids produced in England was Calanthe Veitchii, which flowered in 1859. It was the result of a cross between C. rosea and C. vestita.

Terrestrial Orchids are widely distributed throughout the Peninsula, and are found growing under various conditions, from swampy jungle to mountain peaks, and several species are found growing on railway embankments and on rocks in streams. Since 1840, when Cypripedium barbatum was introduced into England from Malacca, many rare species have been found and added to the large collections already in cultivation.

Owing to the different conditions under which Orchids grow, it is most important when collecting them to observe the altitude to which a plant occurs in a wild state. This information is very useful to the cultivator and often makes all the difference between success and failure. The differences between the maximum and minimum temperatures are often very great, the thermometer rising to 95° at mid-day and falling to 45° at night. Therefore it shows that a low temperature is preferable to a uniform day and night temperature, also that a high temperature in summer is not harmful to the plants, if the house is kept damp, shaded and ventilated. Orchids are generally supposed to be difficult to cultivate; they are, however much easier to grow than many other classes of plants, but terrestrial sorts require careful attention if first quality blooms are desired.

It is difficult to lay down any hard and fast rules with regard to soils and situations, because in their native habitats they grow well in a variety of soils. The following are a few of the best terrestrial Orchids, but my list includes only those that are comparatively easy to grow, and are worth cultivating either for their beauty of flower or their quaint appearance.

Spathoglottis plicata is found throughout the Malayan Peninsula, ascending to an altitude of 4,000 feet, but it is more frequently seen on the plains where the conditions appear to be more suitable; it is often found growing on railway embankments. The leaves are narrow and about two-and-a-half feet long. It has purplish flowers which are produced in great profusion on a raceme six to nine inches high. The white-flowered form, S. plicata alba, is a much smaller plant, its flowers rarely exceeding one inch in diameter. S. aurea, which was discovered in Malacca by Lobb in 1849, has large leaves; the flowers are yellow, the sepals tinted orange on the back, and the lip streaked with red.

The genus Phaius is not represented to a large extent in Malaya, but many species are found in China and Japan. P. grandifolius was one of the earliest tropical Orchids to be introduced into England, having been brought from China about the year 1778. The temperature of the intermediate house should suit it and liberal supplies of liquid manure should be given when the plants are coming into flower. P. Wallichii is the only species met with on the plains, where it is found growing on the edge of the jungle. The scape is from three feet to four feet tall, terminating in a raceme of showy flowers. The latter are about five inches across; the sepals and petals are white outside and orange and brown within, while the lip is white outside and rose-pink inside. P. callosus is a pink-flowered species and of more delicate appearance; it is found wild in dense jungle, growing on rocks at high elevations. A small species, P. pallidus, with racemes produced from a leafy stem, also occurs in some of the hills, but it is a weak grower; its pale yellow flowers are about two inches in diameter.

The beautiful Vanda Hookeriana was introduced into England from Borneo in 1882, and flowered first in the summer of that year. It has slender stems about twelve feet long, and the leaves are cylindrical and tapering. The large, pale rose flowers are two inches to three inches wide, and are produced in racemes; the lip is deep purple and the mid-lobe white, or rose, dotted crimson. It is found scrambling over low bushes in swampy places.

There are nine wild species of Calanthe found in the Peninsula, of which four are very graceful plants. The genus is divided into two sections, deciduous and evergreen. The former is more largely cultivated, the large flower spikes being valuable for decorative purposes. The two best deciduous species are C. vestita and C. rubens. C. vestita has broad leaves about fourteen inches long, which appear after the plants have flowered; the large white flowers are produced on a scape from the side of the pseudo-bulb. This species has been found growing on limestone rocks at high elevations. C. rubens is a smaller plant with white or rose-coloured flowers. Of the evergreen species, C. Ceciliae and C. veratrifolia are the best. The former is a beautiful plant, although rarely seen under cultivation, with a scape about one foot tall bearing a crowded raceme of flowers which are white, tinted with violet, and one inch across. It occurs in damp places in jungle forests. C. veratrifolia has numerous pure white flowers which are three-quarters-of-an-inch in diameter on a scape one foot or two feet long.

The typical species of Grammatophyllum is G. speciosum, which is a giant epiphyte, but it may be grown successfully on the ground. A large plant may produce a number of stems from six to ten feet long, with numerous narrow leaves. The flower spikes are often ten feet tall, and under cultivation bear over a hundred flowers, each one being about five inches in diameter; they are delicate yellow, blotched with dull purple. This species is recognised as a very difficult plant to grow under artificial conditions, and it has rarely been known to flower well. It is found throughout the Malayan Peninsula, growing on tall trees in the jungle and overhanging the rivers. The method adopted for its cultivation here is very simple. The plants are placed on a bed of broken bricks, rocks and soil, and the base covered slightly with a compost consisting of sand, leaf-soil and loam.

Arundina is a small genus of terrestrial Orchids with Bamboo-like foliage. A. speciosa has small flowers, the sepals and petals being white or rose, tinted with a yellow patch on the lip, while the very slender stems are two to three feet long. Although rather an uncommon plant in most districts, it is sometimes seen growing on rocks in streams.

The genus Eulophia is not generally sought after by the amateur owing to its rather inconspicuous flowers. E. squalida is the most striking of the Malayan species. It has large flowers, the sepals being narrow and brownish-green in colour and the petals white or delicately tinted pink; the lip is pale pink with yellow veins. It is found in many parts of the Peninsula in open, grassy country, and like Calanthes, it appears to thrive in a light situation.

There are many species belonging to the genus Habenaria, but the majority are of botanical interest only. They are widely distributed in the east and perhaps the best known species is H. carnea, which is an attractive, small plant with delicate, flesh-pink flowers about an inch across. The scape attains a height of one foot.

The two commonest Cypripediums are C. barbatum and C. niveum, both of which are found growing on rocks and slopes on the edges of streams, and are sometimes seen at altitudes of 4,000 feet. C. barbatum has showy flowers about three inches across; the upper sepal is broad, white, with purple veins, and the petals are greenish-brown, with a number of black warts along the edge, while the large lip is reddish-purple. C. niveum is fairly common throughout the Peninsula. It produces a scape about six inches high bearing one to three large, white flowers, dotted with light purple. *F. S. Banfield, Kuala Lumper.*

TWO LESSER KNOWN PESTS OF FRUIT TREES.

During the past three seasons there have been numerous cases of damage to fruit trees in the London district and the south-eastern counties by (1) a weevil, Rhynchites aequatus, L., and (2) the larva of a Tineid moth, Simaethis pariana, Cl.

Both species have been recorded previously as pests to fruit trees, not only in this country but also on the continent and elsewhere.

(I).—THE APPLE AND THORN FRUIT WEEVIL.

Rhynchites aequatus, L. = purpureus, L. Order Coleoptera; Group Rhynchophora; Family Curculionidae.

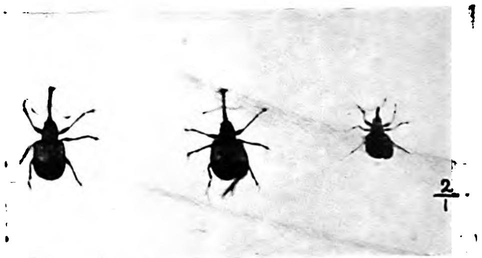

FIG. 202.—APPLE FRUIT WEEVIL.
Rhynchites aequatus, L.; left, ♀♀; right, ♂.

The common name of this weevil has been coined by the writer, but it is known in Germany as the Red-winged Bud Perforator (Rothflügelige Blütenstecher). Mr. J. C. F. Fryer, M.A., Entomologist to the Ministry of Agriculture, tells me that his attention was drawn to an infestation by this species in an Apple orchard in 1916.

Food Plants.—Those recorded at Wisley and elsewhere in this country are the Apple, Quince and Whitethorn. Taschenberg* records the occurrence of this weevil on Apple, Pear, Plum, Cherry, Raspberry and Whitethorn, whilst Schreiner† adds, Apricot, Medlar and Sloe to the list.

Distribution.—In England, this weevil is confined to the London, southern and midland districts (Fowler‡). On the continent, it has been recorded as a pest to fruit trees in Germany, the Bessarabian province of Rumania, Lithuania and in the southern and eastern districts of Russia, particularly in the Ukraine, but it is absent from northern Russia (Schreiner).

Descriptions.—The egg is white, smooth and elliptical, about ¾ mm. long and ½ mm. wide, ($781\mu \times 521\mu$).

The larva is creamy-white, curved and wrinkled, with numerous setae arranged in rows at the base of the body segments, and tufts of setae placed laterally along the segments. The head is a light brown colour. When mature, it attains a length of 4 to 4·5 mm.

The pupa is naked and is usually found in an earthern cell.

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* Taschenberg, E. L.; *Insekten-Kunde*, Band II, 1879, p. 199.

† Schreiner, J. F.; *Mém. Bur. Entom.*, Central Bd. Land. Admin. and Agric., Petrograd, Vol. II, No. 14, 1914.

‡ Fowler; *The Coleoptera of the British Islands*, 1891, Vol. V, p. 124.

The adult (Fig. 202) is a pale golden-green colour, clothed with a hairy, pale tawny-brown pubescence. The elytra (wing cases) are dull, dark red with coarsely punctured lines and the division between the elytra is dark towards the thorax. The head, which bears prominent eyes, and the thorax are very closely punctured and narrower than the elytra. The legs are rather long and mostly reddish, with the exception of the femur which is brass-coloured, and the tibia and tarsus which are almost black. The male is the smaller (circ. 2·5 mm. long), and its rostrum or beak is as long as the head and thorax. The female possesses a curved rostrum twice as long as the head and thorax, and attains a length of 4 mm.

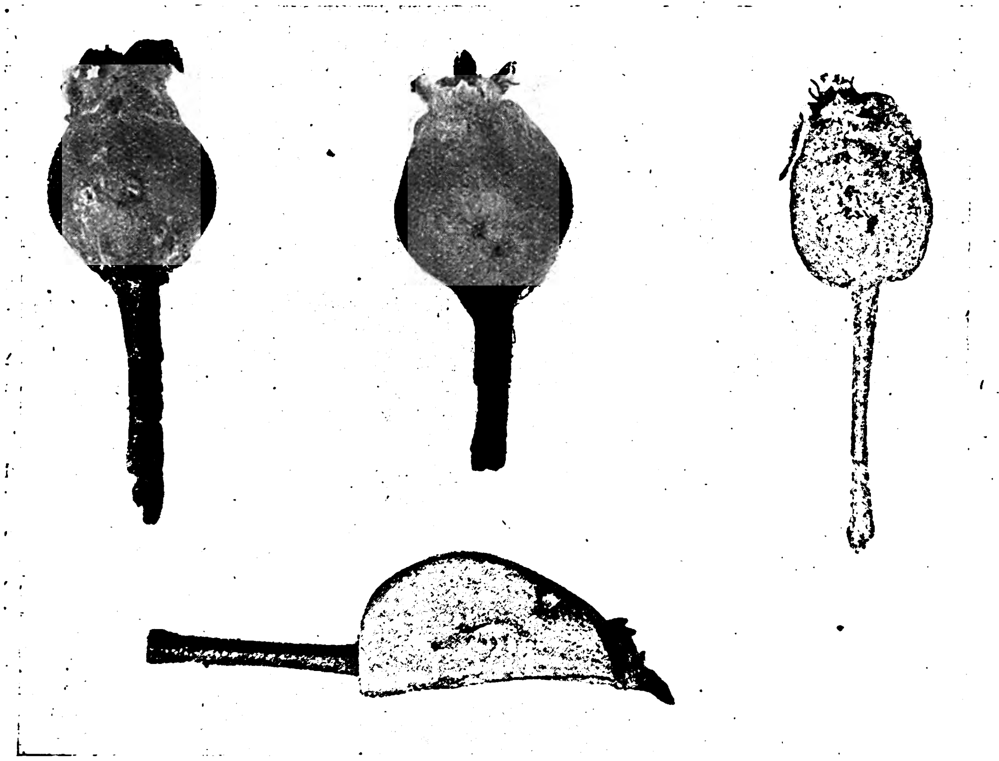

FIG: 203.—FRUITLETS OF APPLE WHITE TRANSPARENT, SHOWING PUNCTURES AND EGG CHAMBER OF RHYNCHITES AEQUATUS, L.

Life History.—The weevils are diurnal feeders and may be found flying about amongst fruit trees and along Whitethorn hedges during May and June. They have been found at Wisley perforating the flower buds of Quince (May 19, 1924), and feeding on the foliage of Apples from early May to the end of June. Taschenberg says that they puncture the buds during various stages of growth, and eat the anthers of Whitethorn, and asks "whether the larvae found within the kernels are those of this species?" Fowler gives the habitat of this species as the flowers of Whitethorn.

The weevils show a decided preference for certain varieties of Apples in which to oviposit. The most sought after varieties in the large collection at Wisley are White Transparent and Mr. Leopold de Rothschild, both of which possess crisp and rather acid flesh. The female walks slowly over the partly developed Apple and bores a hole with its rostrum, which it moves about in order to make a roomy chamber for the egg (Fig. 203). The egg is laid at the entrance to the hole and pushed in with the rostrum, and the epidermis arranged to cover the hole, the time taken to complete the operation is about twenty minutes. It then proceeds to make another hole near the first and repeats the process. One female has been observed to place six eggs in one fruit (Fig. 204).

The egg hatches in about a fortnight. The larva at once commences to feed and eventually to burrow into the fruit and around the core in a manner resembling that of the codling moth larva. The attacked fruitlet usually falls to the ground, which allows the larva to bury itself and eventually pupate. Weevils were bred out in the laboratory when attacked fruitlets were partially or completely buried in soil, but immature larvae died when the fruitlets were placed on the soil; this was due to the drying up of the food.

The larval stage may occupy a period of three to four weeks, but it was found that many larvae remained inactive in the soil for several months before they pupated. This suspended animation resembles that of certain species of sawfly. Twelve mature larvae kept under controlled conditions remained inactive in the soil from June 24, 1926 until June 16, 1927, after which they pupated and emerged as adult weevils early in April, 1928. This may account for the periodic appearance of this pest in orchards.

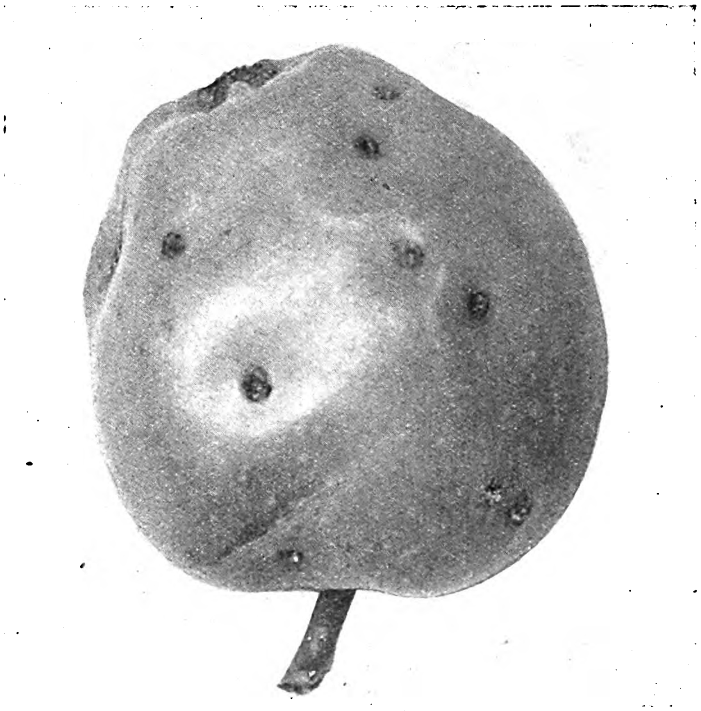

FIG. 204.—APPLE WHITE TRANSPARENT, SHOWING OVIPOSITION PUNCTURES MADE BY RHYNCHITES AEQUATUS, L.

Remedial Measures.—The application of a stomach poison, *e.g.*, lead arsenate wash, is of no practical value against this pest on account of the small amount of leaf surface eaten.

The most satisfactory control measures are: (1) collecting fallen fruitlets by hand, and either burying them deeply or giving them to pigs, and (2) jarring the trees to dislodge the weevils which may be caught in a beating tray, or on white sheets placed beneath the trees. Poultry prove a boon in clearing up the fallen weevil during jarring operations.

(II).—THE APPLE AND THORN SKELETONISERS

Simaethis (Hemerophila) pariana, Clerk. Orde. Lepidoptera; Group Tineina; Family Plutellidae.

This pest is most prevalent in small orchards and private gardens where routine spraying is not carried out on the same extent as in commercial orchards, and in which it is looked upon as of secondary importance.

Food Plants.—The principal food plants in the south-eastern districts of England are the Apple and ornamental Pyrus species. Sorauer[*] and other observers record the following host plants: Pear, Sweet Cherry, Peach, Strawberry, Whitethorn, Ash, Mountain Ash, Birch and Willow.

Distribution.—It has a wide distribution throughout the north temperate zone. Meyrick[†] gives "Britain to the Clyde, central Europe to eastern Siberia (introduced into North America)." Theobald[‡], who was the first in this country to draw attention to its economic importance, remarks that it is generally distributed over Kent, and that he has taken moths at Hastings and Kingston-on-Thames. It is found throughout central and northern Europe, including France, Germany, Holland, Switzerland, Norway, Sweden, Poland, Latvia and Russia, and has been introduced into North America and Japan.

Descriptions.—The larva (Fig. 205, L.) is pale greyish-green, with a broad, yellowish dorsal line. There are irregular rows of black spots varying in number on the thoracic and abdominal segments. The head is light brown;

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[*] Sorauer, P.; *Handbuch der Pflanzenkrankheiten*, Band IV, 1925, pp. 311-312.

[†] Meyrick, E.; *Revised Handbook of British Lepidoptera*, 1928, p. 707.

[‡] Theobald, F. V.; *Jour S. E. Agric. Coll.*, Wye No. 19, 1910, pp. 99–101.

the legs are pale at the base and dark at the apex, and the prolegs are small, thin and yellowish-green. When mature, it measures 10 mm.

The pupa (Fig. 205, P.) resembles a Tortricid pupa, and is enclosed in a pure white cocoon.

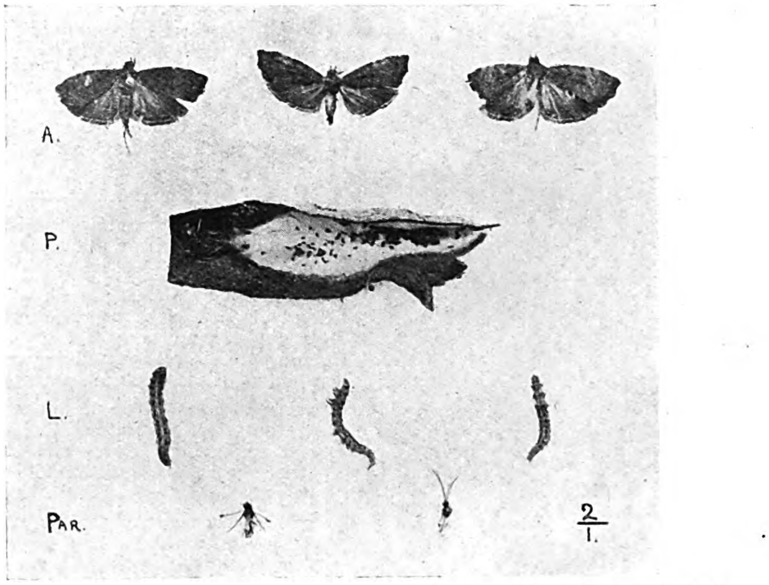

FIG. 205.—APPLE AND THORN SKELETONISER (SIMAETHIS PARIANA, CL.)
A, Adults; P, pupal cases emerging from cocoon; L, larvae; Par., Braconid parasites.

The moth (Fig. 205, A.) possesses dark brown fore-wings, often with a purplish sheen, but there is considerable variation in their colour; whilst some specimens show a uniform colour, others are variegated. The outstretched wings measure about half-an-inch (11 mm.). The hind-wings are more uniform in colour, tawny-brown, with a purplish sheen.

Life History.—This species was first recorded as a pest by Theobald in 1910 from Plaxtol, near Sevenoaks, where serious damage had been done to Apple trees.

It is double-brooded in England, the first brood appearing from mid-May to the third week in June, and the second brood from early July to mid-August. In America* and Japan†, there are three generations, viz., in May, from the end of June to mid-July, and from September to November. Where three generations occur, it is found that the last brood of larvae are controlled by hymenopterous parasites.

The most severe damage has been found to occur on Apple trees, especially younger ones, and ornamental Pyrus species. The variety Lord Derby is frequently chosen by the moth for oviposition.

The eggs are deposited usually on the lower surface of the leaves, often in the groove formed by the main vein, but occasionally on the upper surface. The larvae emerge in from five to seven days and at once commence to feed on the lower epidermis and parenchyma of the leaf (Fig. 206). Many continental and American observers record that the larvae choose the upper epidermis, but we have seen very little skeletonising of this surface. The larvae are gregarious until they become mature, when they scatter over the food plant prior to pupation. The severest damage at Wisley occurred in mid-June and mid-August. When feeding, the larvae web down the margins of the leaf and spin a light web near its centre in which they remain and feed. The first symptom of attack is that the foliage becomes russet-coloured, and later the skeletonised leaves are seen clearly. As the larvae grow, they often spin two or three leaves together to form a conical bag. They feed for two or three weeks and then proceed to spin a tubular cocoon of white silk (Fig. 205, P.). The pupal stage lasts about fourteen days. Where cordons are grown against walls, the cocoons may be found in crevices between the bricks. The moths are found abundantly in old thatch in autumn (Meyrick), and may be found hibernating in cracks beneath the bark of old trees, in thatch of fruit rooms and amongst fallen leaves in hedgerows. In Japan, the moths have a habit of massing on flowers of cultivated Chrysanthemums (Kuwayama).

The second broods of moths were found abundantly at Wisley during the third and last weeks in September.

In America, hibernation is often passed in the pupal stage either in cracks of the bark or on dead foliage still remaining on the trees.

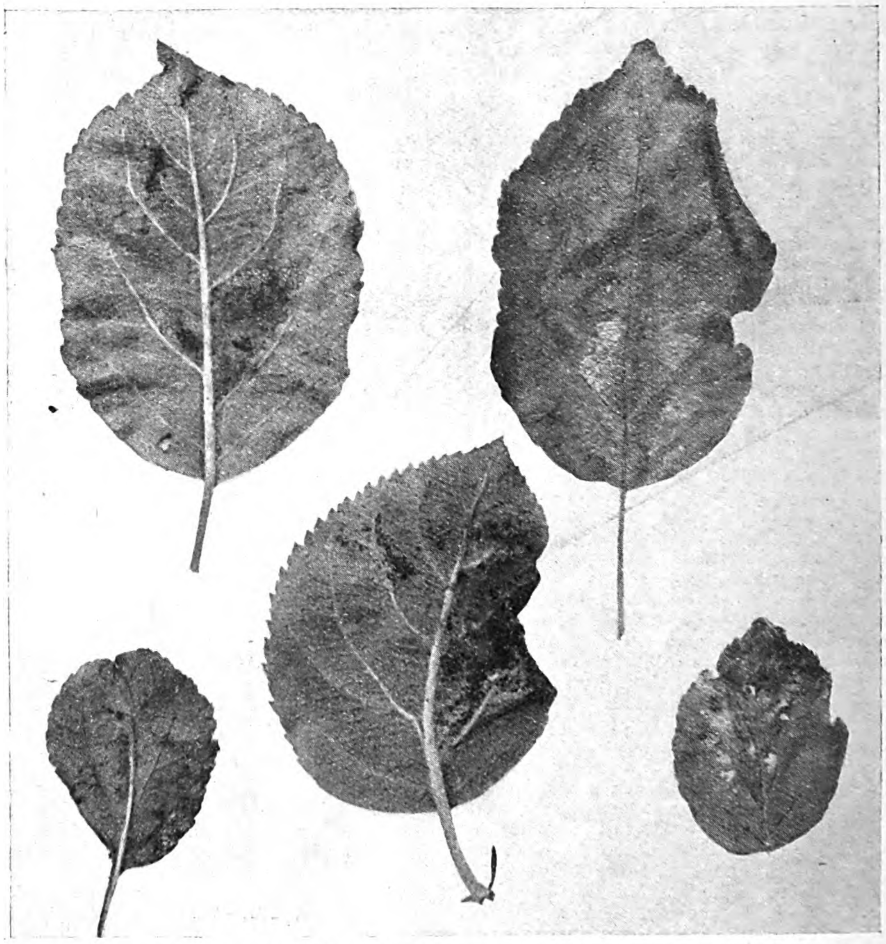

FIG. 206.—FOLIAGE OF APPLE LORD DERBY SKELETONISED BY LARVAE OF SIMAETHIS PARIANA, CL.

Natural Enemies.—Numerous hymenopterous parasites have been bred from the larvae. At Wisley, the commonest parasite is a Braconid, Apanteles longicauda, Wesm. (Fig. 205, Par.) which emerged in large numbers from larval "nests" during August. A smaller percentage of larvae are parasitised by an Ichneumonid, Mesocorus tachypus, Hgn. For the identification of these species I am indebted to Mr. Roman of the Natural History Museum at Stockholm.

In Connecticut, seven species of parasitic Hymenoptera have been bred from the larvae and two species from the pupae, from which stage, also, has been bred a Tachinid fly (Diptera).

Sorauer states that earwigs are found frequently in the larval "nests," and suggests that they act as predaceous enemies of the insect. In Poland, Minkiewicz* records the following larval parasites: Four species of Ichneumonids, two species of Chalcids, and one species of Braconid, whilst an Anthocorid bug and the common earwig act as predators.

Remedial Measures.—The most satisfactory method of control is to spray the affected plant with lead arsenate wash during the early stage of attack, before web-spinning commences. Nicotine-soap wash is satisfactory provided that it is applied before the larvae are protected by the webbing, and that they are hit by the wash.

Theobald recommends hand-picking of the larval "nests" in nurseries.

Shaking the trees vigorously dislodges the larvae and, provided the stems of standards and half-standards are grease-banded to prevent reinfestation, spraying may be eliminated. The application of an arsenical wash to early maturing varieties of Apples is unwise, and should be avoided. When infested trees are shaken, the larvae let themselves down by means of silken threads. *G. Fox Wilson, R.H.S. Laboratory, Wisley.*

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* Porter, B. A. and Garman, P.; *Connecticut Agric. Exp. Stn., Bull.*, 246, pp. 247-264.

† Kuwayama, S.; *Jour Haikkaido Agric. Soc.*, Sapporo, Vol. XXII, Nos. 254-255, pp. 1-14.

* Minkiewicz, S.: *Mém. Inst. Natnl. Econ. rur. Pulawy*, Vol. VIA, pp. 330-365.

MESEMDRYANTHEMUM.

(*Continued from p.* 340.)

14.—ASPAZOMA, N. E. Br.

Succulent, perennial, bushy, branched. Leaves more than two to a branch, some alternate and others opposite, semiterete or sub-trigonous, always with a tubular sheath, embracing the branches or the sheath above, and nearly or quite as long as the internodes. Flowers terminal, solitary. Calyx produced above its union with the ovary into a distinct tube, unequally 4–5-lobed above, with 2 lobes leaf-like, the others shorter and more membranous. Petals numerous, linear, in 2–3 series, apparently united into a short tube at the base. Stamens and staminodes numerous, erect, possibly connivent into a cone? Stigmas 4–5, subulate. Ovary conical at the top, (probably half-superior, but too crushed to decide), 4–5-celled; placentas axile. Capsule not seen.—N. E. Br., in *The Gardeners' Chronicle*, 1925, Vol. LXXVIII, p. 413, and in Phillips, *Gen. of S. Afr. Fl. Pl.*, p. 244.

The only species is A. amplectens, N. E. Br., the type of the genus, a native of Namaqualand region.

The generic name is derived from the Greek, *aspazomai*, to embrace, in allusion to the tubular sheaths of the leaves which embrace the stems.

1. **A. amplectens, N. E. Br.,** in Phillips, *Gen. of S. Afr. Fl. Pl.*, p. 244.—Plant about 5–6 inches high. Leaves 7–18 lines long, with tubular sheaths about ½-inch long. Calyx-tube enclosed in the sheaths of the uppermost leaves, globose-obconic, papillate. Corolla about 1½ inch in diameter, pale straw-coloured.

Mesemb. amplectens, L. Bolus in *Ann. S. Afr. Mus.*, Vol. IX, p. 153 (1913).

Little Namaqualand; on stony slopes of hills near Daunabis. Pearson 6064! Van Rhynsdorp Div.; hill near Nieuwerust, Pearson 5515. Mountains N.E. of Walle Kraal, Pillans 17,907.

This is a remarkably distinct plant of dwarf, bushy habit, quite unlike any other in the group. I have not seen it alive.

15.—AMOEBOPHYLLUM, N. E. Br.

Perennial succulents, with distinct internodes. Leaves alternate, sessile, withering and persisting as sharp spines, or the basal part only persistent as a hardened fragment. Flowers terminal in lax bracteate cymes, pedicellate. Calyx slightly produced above its union with the ovary into a short tube, 5-lobed above. Petals numerous, united at the base into a short tube, and arising around the top of the ovary, not at the top of the calyx-tube. Stamens numerous, collected into a cone, surrounded by spreading staminodes, arising from the tube of the corolla and deciduous with it. Stigmas 5, subulate. Ovary half or less than half-superior, 5-celled; placentas axile. Capsule half or more than half-superior, with 5 valves and cells, only an immature specimen seen; valves with the expanding-keels contiguous into a central keel, and with a broad, marginal inflexed wing on each side. Seeds several in a cell, immature in the specimen seen, compressed, minutely tuberculate.—N. E. Br. in *The Gardeners' Chronicle*, 1925, Vol. LXXVIII, p. 433, and in Phillips, *Gen. of S. Afr. Fl. Pl.*, p. 244.

Species 3, natives of Damaraland and Namaqualand, the type of the genus being A. angustum, N. E. Br.

The name is derived from the Greek, *amoibe*, alternation, and *phyllon*, a leaf, in allusion to the leaves being alternate. Mrs. Bolus in *South African Gardening*, 1927, Vol. XVII, p. 364, gives a different derivation, as if seeking to claim the genus as her own, since no mention is made of its place of publication or its author.

In the *Genera of South African Plants*, my description of the corolla, stamens and stigmas were partly based upon the flower of A. Rangei, as I have not seen A. angustum with these organs in perfect condition, but Mrs. Bolus having figured the latter from a living plant under another name, I have slightly modified the above description in accord with her figure of the living plant, but there seems to be no difference of generic import. Also, upon further examination, of the only fruit I have yet seen, I am doubtful if my statement that the wings of the valves are really united in pairs is correct; the fruit is a damaged one and glued to the sheet on which it is mounted, and by repeated wetting the wings have either become free or were only held together by a little glue, as I now suspect. As I have not seen any living plant of this genus I am unable to illustrate it.

1. Leaves 5–9 lines broad, ovate-lanceolate, acute; green parts coarsely papillate. **3, Gurichianum.**

Leaves ½–2½ broad, linear, linear-lanceolate or subulate and drying spine-like. **2**

2. Leaves ½–1 line broad, sub-terete or subulate, very acute, persisting as stiff spines; calyx-lobes spine-tipped; green parts minutely or finely papulose. **1, angustum.**

Leaves 1½–2½ lines broad, linear or linear-lanceolate, and in the specimens seen with only the basal part persistent as stiff broken fragments; calyx-lobes not spine-tipped; green parts coarsely papulose. **2, Rangei.**

1. **A. angustum, N. E. Br.,** in Phillips, *Gen. of S. Afr. Fl. Pl.*, p. 245.—A bushily-branched plant, probably about a foot high; branches stiffly erect, those seen (dried) 5–7 inches long and about 2–2½ lines thick, slightly zigzag, with internodes 3–4 lines long, glabrous and minutely papulose on all green parts. Leaves alternate, 8–15 lines long, ½–1½ line broad or thick, subulate or sub-terete, very acute, and persistent as sharp, stiff spines, spreading and upcurved, usually with leafy buds in their axils. Cyme terminal, lax, up to 2½ inches in diamteer, 3–5-flowered, bracteate. Pedicels 6–9 lines long, 1¼–1½ line thick below, enlarging upwards. Calyx with the ovary-part obconic, 4–5 lines in diameter; lobes with spine-like tips from a dilated base, the three longer up to 6-7 lines long, and the shorter and one of the longer with broad, membranous margins at the basal part. Petals and stamens not seen in perfect condition, but according to Mrs. Bolus, "the flowers open during the day and remain open late in the evening, with pale rose petals fading to a salmon-pink; numerous stamens more or less collected into a cone, and a few radiating staminodes with abortive anthers"; the corolla is stated to be about 9 lines in diameter, with the petals in two series and 5 lines long. Stigmas 5, "filiform, 2½ lines long." Capsule more than half-superior, depressed sub-globose, 5-ridged on the top, otherwise as described under the genus.

A. roseum, L. Bolus, in *South African Gardening*, 1927, p. 364 and 365, f. 15.

Little Namaqualand: near Silverfontein, 2,500-3,000 feet alt., Drège 2,935. Copperberg, Pillans 5,741.

A remarkably distinct plant, distinguished from all others of this alliance by its rather stout, stiffly erect branches and alternate, sessile leaves, which wither and become spines.

I think the two following species belong here, but until all three species have been examined and compared in a living state, their position cannot be definitely determined.

2. **A. Rangei, N. E. Br.**—A perennial, bushy succulent, up to one foot high, coarsely papillate on the green parts; branches erect, stout, about 2½ lines thick (dried), apparently somewhat 3-angled at the upper part, glabrous. Leaves alternate, only a few of the uppermost seen, sessile, about 6-8 lines long and 1½-2½ lines broad, linear or linear-lanceolate, acute, apparently concave-channelled above, and slightly convex on the back, after withering, apparently only the basal part persists as a stiff, broken fragment. Flowers in lax terminal cymes about three inches in diameter. Pedicels about 2 lines long. Calyx-tube obconic, produced above its union with the ovary into a very short tube about ½-line long, unequally 5 lobed above, the 3 larger lobes 5-8 lines long and 2½–3 lines broad at the base (dried), ovate, tapering to an acute or sub-obtuse point; the 2 other lobes with broad, membranous margins and a dorsal, acute point 1–2 lines long. Corolla apparently, about 1 inch in diameter; petals numerous in 2-3 series, about 5 lines long and less than ½-line broad, narrowly linear, united at the base into a tube, 1½ line long, possibly white? Stamens numerous, in several series, arising from the tube of the corolla and not longer than it. Filaments short, apparently incurved. Stigmas 5, about ½-line long, subulate. Ovary partly superior.

Great Namaqualand; Keis Flats, near Letterkopp, about 2,800 feet alt., Range, 1,056.

3. **A. Gurichianum, N. E. Br.**—Plant strongly or coarsely papillate. Leaves alternate, 9-14 lines long, 5–9 lines broad, ovate-lanceolate, acute. Flowers on terminal branchlets, pedunculate. Calyx 5-lobed; lobes very unequal, 3 larger than the others, all acuminate. Corolla 7 lines or more in diameter; petals rosy. Stamens numerous, included. Stigmas short. Ovary ovoid, half-superior, 5-celled. Mesembryanthemum Gurichianum, Pax in Engler *Bot. Jahrb*, Vol. XIX, p. 133 (1894).

Damaraland: near Anichab, by the river Ugab, Gurich 75.

This species is only known to me from the very imperfect description of which the above is a translation, from which I think it must belong to the genus. *N. E. Brown.*

(*To be continued.*)

THE GENUS PRIMULA.

(*Continued from page* 338.)

Beesiana (Forrest). Bees' P.
(Candelabra.)

A rather handsome, deciduous perennial, forming a rosette of numerous leaves five to nine inches long and one inch to two inches wide, with broadly lance-shaped, blunt or pointed blades, tapering gradually to a narrowly-winged stalk, with a dull red midrib; margins irregularly toothed, surface smooth above, slightly hairy below. Flower stems numerous, two to three feet tall, stout, densely covered with white meal upwards. Flowers in five to eight superposed whorls of twelve to sixteen faintly fragrant blossoms of a deep, rose-carmine colour, with an orange-yellow eye. Corolla three-quarters-of-an-inch across, with five rounded lobes, slightly notched; tube funnel-shaped, about half-an-inch long.

Flowers in June and July. Found in moist, gravelly alpine meadows on the Lichiang Range, north-western Yunnan, at 11,000 feet above sea-level. Introduced in 1908.

Culture: Good light loam and a little leaf-soil, in a moist, half-shady spot; it seeds abundantly and is quite hardy.

Begoniiformis (Petitm.) Begonia-like P.
(Sinenses.)

A small delicate perennial plant with a rather long, stout root-stock for its size. The rounded or broadly oval, bluntly-lobed leaves are from half- to one-and-a-half inch across, heart-shaped at the base, with long, slender stalks more or less curved, from one inch to two-and-a-half inches long, all more or less hairy. Flower stems several, one-and-a-half inch to four inches tall, slender, slightly hairy, somewhat curved, bearing an umbel of three to six blossoms varying from rose to violet-red. Corolla tube narrowly cylindrical below, funnel-shaped upwards, lobes spreading, half-an-inch across, obovate, notched.

Grows in vegetable debris on shady limestone rocks in the Lankong Gorge Pee-cha-ho, at Mo-so-yun, in Yunnan, at about 7,000 feet above sea-level. This plant is considered to be one of the numerous microforms connecting P. obconica with P. Listeri, and would probably require greenhouse culture in this country.

A compost of loam, leaf-soil and sand, in shade should suit it.

BELLA (Franch.) Beautiful P.
(Bella.)

A very delightful dwarf species, forming mats composed of tufts of smooth, oval or nearly round leaves, about one-and-a-half-inch long, with fairly long, winged stalks; the margins are cut into narrowly linear, sharply-pointed lobes, and the under surface of the whole leaf is coated with white meal. Flower stem one inch to two inches tall, slender, bearing from one to three blossoms of a rich purple-violet or rose-purple colour. Corolla five-eighths to three-quarters-of-an-inch across, with broadly ovate, wedge-shaped lobes, bilobed below the middle; tube cylindrical, with a tuft of snow-white hairs in the throat.

Flowers in June and July. Grows in stony, peaty pastures and in limestone moraines, on the Mekong-Salwin Divide, and the Lichiang Range, in north-western Yunnan, western China, at 13,000 to 15,000 feet above sea-level.

Culture: Grow it in limestone chippings and fibrous peat in a damp, half-shady spot, or treat it as a moraine plant; protect from damp in winter. Introduced in 1908.

BELLIDIFOLIA (King). Daisy-leaved P.
(Capitatae.)

This species is a doubtful perennial and usually perishes after producing seeds. Leaves two to four inches long, broadly lance-shaped or spoon-shaped, toothed, thin in texture, downy on both surfaces. Flower stem four to ten inches tall, smooth, stout, erect, bearing a dense head of bluish-purple or violet-coloured blossoms, about one inch through. Corolla about five-eighths-of-an-inch across, slightly concave, divided into five slightly notched, oval or wedge-shaped segments; tube about three-quarters-of-an-inch long, cylindrical, contracted at its mouth.

Flowers in May. Grows in open alpine pastures in damp, rocky places in the Sikkim Himalaya, at 13,000 feet above sea-level, closely related to P. farinosa.

Culture: Good gritty fibrous loam in a moist half-shady spot should suit it. *Bot. Mag.*, t. 8,801.

BIONDIANA (Petitm.). Biond's P.
(Auriculata.)

A desirable little Chinese plant with a small rosette of oblong, spathulate, remotely-toothed leaves, about one inch long, smooth above, covered with yellow meal below, narrowing into wedge-shaped stalks. Flower-stem three-and-a-half to four-and-a-half-inches tall, erect, rigid, bearing an umbel of three to twelve violet-coloured flowers. Corolla about five-eighths-of-an-inch long, and half-an-inch across, with short lobes divided into smaller, rounded segments.

Flowers in March. Grows on the mountains in the southern portion of the province of Shen-Si, central China.

Culture: Good loam, in a moist, half-shady spot is indicated.

BLATTARIFORMIS (Franch.) Verbascum-like P.
(Sinenses.)

This robust species forms a fairly close tuft of foliage covered with dense, short hairs. Leaves two-and-a-half to five-and-a-half inches long, oval-lobed, lobes toothed; they are borne on hairy, rounded stalks, half- to one-and-a-half inch long. Flower stem ten to sixteen inches tall, rather slender, densely hairy, bearing ten to eighteen fragrant blossoms, ranging in colour from deep velvety rose-red to clear lilac-rose with a yellow eye; they are borne in a loose, one-sided spike or raceme. Corolla three-quarters-of-an-inch to one inch across, divided into five egg-shaped lobes; tube cylindrical, five-eighths-of-an-inch long.

Flowers in July and August. This handsome species is found in comparatively dry, shady, rocky places in sheltered situations on the mountains of northern and western Yunnan, at 7,000 to 10,000 feet above sea-level. Introduced in 1915.

Culture: Fibrous loam and sandy leaf-soil, in a rather damp half-shady spot, with protection from wet in winter, are the conditions required. *A. W. Darnell.*

(*To be continued.*)

NOTICE OF BOOKS.

Horticultural Archaeology.

THIS volume of essays,* by a well-known writer on garden- and herb-lore, shows an undiminished zest for the charming things that belong to the archaeological side of horticulture. Although one might complain that several of these essays come dangerously near to being treatises, in which case authorities and an index should be essentials (for an essay rightly should contain only a few main thoughts flashing like sunshine upon a sea-bird's wings), such a cavilling would be unfair to one who reveals in every page her preference for the quiet, beautiful things of life. Her plea for the re-admission into favour of some of our old-fashioned flowers and herbs, many of exquisite beauty and fragrance, in preference to certain exotics and over-cultivated plants, will not fail to appeal to many garden-lovers. Nevertheless, in considering the book as a whole, one cannot but wish that the writer had started with a better scheme of values than that which reveals itself. In the first three essays especially ("Gardencraft in the Bible," "Gardens of the Pharaohs," and "The Traditional Influence of the Gardens of the Ancient East"), one feels that in spite of an abundance of allusion to legends, myths, symbols, etc., the result is rather unconvincing. It may be true that the Fountain and the Solitary Tree, characteristic of ancient gardens in both the East and the West, had their origins in symbolizations of feminine and masculine qualities, but the proof is not stated.

Other essays deal with the gardens of the sixteenth, seventeenth, and eighteenth centuries; "Old Bee Books"; "The Making of a Herb Garden," "Oxford Gardens," etc. The book contains twenty-six essays, illustrated with twenty-four half-tone illustrations. A graceful tribute is paid to William Lawson, whose *A New Orchard and Garden*, 1618, must have been a very popular book. This book is now being re-issued, with two other works by Lawson, by the Cresset Press. Reference is also made to the *Catalogus plantarum* . . . By a Society of Gardeners, London, 1730, of which only the first part was published, and the frontispiece is reproduced. It may not be generally known that the original paintings for this work, executed by Jacob van Huysum, are preserved in the Print Room of the British Museum (Sloane MS. Min. 23). In addition to the twenty-one paintings and frontispiece engraved in the *Catalogus*, this MS. contains several hundreds of plant paintings, including two additional frontispieces. The paintings are well executed, although a somewhat crude green was used for most of the foliage. The failure to complete the engraved work was due, no doubt, to the great expense involved.

In the essay on "The Elizabethan Garden" it is pleasant to find a fairly good half-tone reproduction of one of Jacques Le Moyne's beautiful flower-paintings, from the collection preserved in the Victoria and Albert Museum. It may be of interest to state here that recently an enterprising firm of publishers in Paris, Messieurs Duchartre et van Buggenhoudt, 15, rue Ernest-Cressen, have re-published the first and second parts of De Bry's *Grands Voyages* in modern French, in one volume, at a moderate price, under the title: *Voyages en Virginie et en Floride*. Le Moyne's excellent pictures of the natives, ceremonies, etc., of Florida, are here reproduced in reduced facsimile. In like manner John White's pictures of the natives, etc., of Virginia, are reproduced in the first part of the book, together with Thomas Hariot's well-known account of the natural resources of Virginia. The omission from this reprint of Le Moyne's own Narrative of the Second Voyage to Florida is much to be regretted, as that simple tale is, to my mind, far more convincing than the political document which constitutes Laudonnière's Narrative. In 1875, an English translation of Le Moyne's Narrative was published at Boston, U.S.A., but is now very scarce. My own interest in Le Moyne, the Huguenot refugee, who died at Blackfriars, London, in 1587, had led me to consider the possibility of issuing a facsimile of his little book of woodcuts entitled *La Clef des Champs*; and provided that I can receive sufficient support from subscribers, in response to a circular to be issued shortly, I hope to be able to place this exceedingly rare and interesting work in the hands of those who care for the pictorial records of old-world gardening.

In conclusion, to touch upon an aspect of flower-lore which is, perhaps, unknown to most people, I may make a brief reference to the Floral Games of Toulouse, *Les Jeux Floraux*, founded by seven Troubadours in 1323. From the following year onwards to the present day, the Academy of the Floral Games of Toulouse has met annually to award the Golden Violet, *Violeta del aur*, the Eglantine, *Ayglentina*, and the Marigold, *Souci*, the second and third in silver, for the best poems in certain forms of verse. To win the Golden Violet is now, as in the fourteenth century, a high honour. *S. Savage.*

Studies in the Ecological Evolution of the Angiosperms.*

THE book may be described as a work for the student and thinker, who read for the sake of science or knowledge rather than for utilitarian purposes. Ecology has already developed into a large branch of science, but may only be regarded as a branch of botany, since it requires morphology, physiology and systematic botany to elucidate or support its postulates. Many new words have been formed to express the new ideas, and some of them have not found their way into comparatively recent encyclopaedic dictionaries, not even the word ecology itself.

The book is divided into six chapters, dealing first with the fossil record and its interpretation, ancient flowers with a perianth, sympetaleae and Monocotyledons. Next comes a chapter on trees and shrubs. Tall trees under moist tropical conditions were considered to be the original or most primitive angiosperms of the forests. The author was lately Professor of Botany in the Natal University College, and had ample opportunity for studying tropical trees in their native habitats. Trees under those conditions grow continually, flowering irregularly at any time from the young growth or from the old wood. The explanation of the latter phenomenon is that the bark remains thin, sometimes semi-transparent, and that axillary buds long dormant may develop after many years. The seeds and fruits more often than otherwise simply drop to the ground. Evolutionary changes were brought about by drier and colder conditions, when flowers became more highly developed, and seeds and fruits were more often distributed by the wind. Such changes brought about decrease in height and increase in branching, so that trees gave rise to shrubs, sub-shrubs and finally, herbs. All these smaller types, with the greatest amount of evolution, are termed derivatives. Annuals were the next stage in evolutionary advancement to fit them for a resting condition. The evergreens of tropical forests have their leaves built to endure; the deciduous trees have leaves of a thinner and more flimsy character, with an abciss developed quite early in life in preparation to cast them off so as to enable the plants to withstand a dry season or a cold climate.

The chapter on the evolution of climbing plants is also interesting. Woody lianes are considered the more primitive types, and the evolutionary trend has been from the woody to the herbaceous type. Some that climb by means of roots may have commenced as terrestrial plants, becoming epiphytes by the dying of the older parts of the stem; while others may have begun as epiphytes, and by means of geotropic roots finally became terrestrial plants.

The last chapter deals with the evolution of the grasses, which are supposed to have their

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**Garden-Craft in the Bible, and other Essays.* By Eleanour Sinclair Rohde. London: Herbert Jenkins, Ltd. Price 10s. 6d.

* *Studies in the Ecological Evolution of the Angiosperms.* By J. W. Bews, M.A., D.Sc., Professor of Botany in the Armstrong College, Newcastle-on-Tyne, &c. *New Phytologist* Reprint, No. 16. Wheldon and Wesley, Ltd., 2, 3, and 4, New Oxford Street, London, W.C. 2. Price 8s. net.

origin in the Liliiflorae, with some uncertainty. The Bamboos, because woody, are reckoned amongst the primitive types, and the gap between them and Festuca is not wide; while the species of Festuca, or even F. ovina, are found in all temperate and arctic parts of the globe. The family of grasses is considered to have originated in wet, warm habitats; that they became modified and diversified by ascending the mountains of tropical countries, and thus prepared the way for covering the earth in temperate and cold counties.

The book is highly interesting from the fact that it takes the whole earth for a field of study, instead of a country.

HOME CORRESPONDENCE.

The December Frosts.—It is now possible to form some idea of the losses sustained in the garden from the severe Christmas frosts. Severe damage was evident weeks ago, but a deferred opinion, usually considered likely to correct undue pessimism, has, in this case, only made the tale more doleful. One hoped that many shrubs, obviously damaged to the ground level, would produce growths from below, and that certainly herbaceous plants and hardy biennials would be found uninjured. In too many cases this hope proved false. My garden is low, situated in a valley running east and west, and the sharpest frost experienced was 28°. The snow was heavy and gave a good covering, which one looked at with gratitude as a protection from the very low temperature. What would have happened had there been no snow is too awful to contemplate. The most obvious effect is the bare state of such things as the common Ivy, Privet and Euonymus. These lost every leaf, and in most cases young twigs also. Rambler Roses of every kind were killed to the ground level but are now growing strongly; standard Rose trees are a sorry sight, and many entire heads are lost; while bush Roses suffered similarly to the ramblers, but the recovery of a large percentage is improbable. Plants that were killed outright are Veronicas of all kinds, excepting V. canterburyensis, just alive; Lonicera japonica, Escallonia macrantha and E. langleyensis, Ceanothus divaricatus, a fine tree which has been a glorious sight for the last two years; Ozothamnus rosmarinifolius, a delightful little shrub which is specially regretted; Spartium junceum, Pentstemons of all kinds, Choisya ternata in all but the most sheltered positions, Cistus of all kinds, Eleagnus and Olearia stellulata. Plants which suffered badly, but now show signs of life are, Buddleia globosa, Cytisus alba, Tamarix gallica, Berberis stenophylla, some Conifers, Gyneriums, Pyracanthas, a fine bush of Abutilon vitifolium, ten feet high, which had survived eight winters, and several kinds of Clematis. Other plants entirely obliterated were Antirrhinums, Cheiranthus Allionii, Incarvillea Delavayi, Sweet Williams, many Chrysanthemums and Salvia Sclarea. The latter plant I used to lift, but found it withstood previous winters unharmed. Moreover, seedlings used to appear in numbers, even in the pathways. Like Cheiranthus, the usual crop of seedlings was killed also. Tubers of Gladioli and Tigridias were stored as usual in an unheated greenhouse, covered with sacks during the frosts. All were killed, but a few Tigridias which escaped being lifted survived in the garden. Kniphofias appeared to be killed, but on clearing away the dead leaves, green shoots are seen, although not of flowering strength. Iris unguicularis also appeared dead but shows the merest glimmer of life, but another loss is Schizostylis coccinea. These losses are just the occurrences in a small and unpretentious garden, therefore, unless I have been unusually unfortunate, the total losses throughout the country must be enormous, and will take some years to make good. *E. Brown, Doddington, Sittingbourne, Kent.*

Royal Gardeners' Orphan Fund.—For nearly sixty years I have been familiar with the cover of your valuable journal. For forty of these years I have been a critical and appreciative reader. Although I do not belong to your profession, I was bred and reared by one of the foremost gardeners in the north of England, who was, I believe, a valuable occasional contributor of yours. Mr. Henry James Clayton of Grimstone Park Gardens, Tadcaster, was a big man, both in stature and mind, and I do not think that he would have minded the (I hope) unintentional slight which occurs in the sympathetic leading article on the above topic which appeared in your issue of May 12. My postbag has shown that not only his sons, but a host of his friends, have noticed that his name was omitted from the originators of the above charity. My father always claimed that he was joint originator of this fund with the late Mr. Penny. They were friends, but had never discussed the matter together prior to the publication of their letters in the same week's issue of two separate gardening papers. Mr. Penny sent his to Mr. Wright, and my father's went, I think, to his friend, Mr. William Robinson. I believe both letters appeared in the same week, although, in those days, the *Journal of Horticulture* was published a day or so before *The Garden.* For the memory of a great gardener, whose love for children permeated his whole life, perhaps you will look up the matter again and, if my contention is true, I have no doubt that you will gladly correct the *lapsus memoriae. William Clayton, Appleton Roebuck, York.*

Apple Orleans Reinette.—I agree with all that Mr. G. Yeld states about the above (see p. 385), and would like to add a remark or two. This Apple was unknown to me, except by name, until a few years ago. My friend Mr. Edward Bunyard called my attention to it, and I started to grow it in a small way. The texture of the fruit is firm but tender, and it is very juicy; the flavour is so delicious that there is no doubt that it ranks among the half-dozen best-flavoured Apples. I heartily and confidently recommend it to all lovers of a good dessert Apple. *F. Herbert Chapman, Rye.*

Pyrus Malus Russell's Weeper.—Like many others of your readers, I have been much interested in the notes that have appeared in the pages of *The Gardeners' Chronicle* regarding this Crab. Three points have occurred to me in connection therewith. Mr. Russell and his son, when they saw specimens of P. m. Exzellenz, Theil at Aldenham, had no reason to doubt that the form called by them Russell's Weeper was identical with the German form, and so, expressed themselves, and one prime point to be drawn therefrom is that there is apparently no question as to the pendulous habit of each being the same. From this comes the second point, that the main bone of contention appears to be with reference to the colour of the flower and bud, for Sir William Lawrence states that his plant fits L. Späth's description, as quoted by him, whilst we at Aldenham, knowing that our plant originated in Späth's nursery, do not find that this description fits it aptly, possibly owing to different growing conditions, for whilst the buds are red, and the flower flushed pink on opening, this colour disappears mostly with age, although at times some of the flowers hold the pink shade well. The last point is that Mr. Russell's plant, as shown before the Floral Committee "B," was probably brought into flower under glass and, as most folk know, this has a strong bleaching effect on flower colour, which would probably account for Russell's Weeper (?) having white buds and flowers, and the conditions would probably affect size and shape of the flowers. I would suggest that the best test of all, noting Sir William's remark that he and Mr. Russell are to show their respective plants next year, would be for all three forms (*sic*) to be grown under identically the same conditions, aiming to get them into flower at the same time, and then for judgment to be passed as to whether they are the same or not. Further useful evidence would be provided if Mr. Russell endeavoured to discover whence his plant originated, for I understand that at present this is either doubtful or unknown. *E. Beckett, Aldenham Gardens, Elstree.*

SOCIETIES.

ROYAL HORTICULTURAL.

JUNE 5 AND 6.—There was an especially good show at the Horticultural Hall, Vincent Square, on these dates. Orchids were more numerous than is usual at this time of the year, and the Committee recommended three awards of Merit to novelties. The principal general floral features were Sweet Peas and Antirrhinums, of exceptional quality, and many collections of Irises, Carnations, Roses, hardy border flowers and alpines. Several novelties were submitted to the Floral Committee, and of these, eight were recommended for Awards of Merit, and a number of Irises and one Antirrhinum were selected for Trial at Wisley. Beyond two dishes of Apples, the Fruit and Vegetable Committee had nothing to occupy its attention.

Orchid Committee.

Present: Sir Jeremiah Colman, Bt. (in the chair), Mr. Gurney Wilson (Hon. Sec.), Mr. Fred J. Hanbury, Col. Stephenson Clarke, Mr. Wilson Potter, Mr. R. Ashton, Mr. R. G. Thwaites, Mr. T. Armstrong, Mr. A. McBean, Mr. J. Cowan, Mr. Lionel de Rothschild, Mr. Flory, Mr. A. Dye, Mr. Charles H. Curtis, Mr. H. G. Alexander and Mr. Fred Sander.

FIRST CLASS CERTIFICATE.

Odontoglossum crispum Harvest Moon.—As this variety was exhibited in Messrs. ARMSTRONG AND BROWN's group at Chelsea Show, we credited it to that firm (see p. 374). We learn, however, that it belonged to Messrs. J. AND A. MCBEAN.

AWARDS OF MERIT.

Odontioda Maureen var. Mavourneen (Odm. eximium × Oda. Chanticler).—A beautiful variety with shapely flowers of rich scarlet hue. Shown by LIONEL DE ROTHSCHILD, Esq. (gr. Mr. Bedford), Exbury, Southampton.

Miltonia gattonensis, Exbury var. (Bleuana × Charlesworthii).—A lovely form in which the large flowers are milk-white with carmine mask and three red-brown lines below the yellow disk. Shown by LIONEL DE ROTHSCHILD, Esq.

Odontoglossum Golden Glory (parentage unknown).—This delightful Odontoglossum has medium-sized flowers that are creamy-white, with numerous light yellow markings on sepals, petals and lip; the disk is pale gold. Shown by FRED. J. HANBURY, Esq. (gr. Mr. Farnes), Brockhurst, East Grinstead.

GROUPS.

S. G. BROWN, Esq., Brownland, Shepperton (gr. Mr. Thurgood), displayed a fine group of Orchids that included excellent flowering examples of Phalaenopsis Rimstadiana, Vanda coerulea, Renanthera Imschootiana, Promenaea citrina with about three dozen flowers, Odontioda Gloss, O. Charlesworthii, Odontoglossum eximium, O. Arcania, Brassia verruculosa, Epidendrum prismatocarpum, Vanda teres and Galeandra Devoniana.

G. MEYER, Esq., Wistler's Wood, Woldingham (gr. Mr. G. Cowan), presented a small group of Orchids that contained the yellow Odontoglossum Rêve d'Or, varieties of O. crispum, Odontioda Gladys, Cypripedium bellatulum, Cattleya Mossiae and Laelio-Cattleya Canhamiana.

J. J. BOLTON, Esq. (gr. Mr. S. Lyne), Claygate Lodge, showed fine examples of Odontoglossum Corona, O. ardentissimum Robsoniae, O. crispum Apollo and O. Monarch. Sir JEREMIAH COLMAN, Bt., Gatton Park, Reigate, showed Bulbophyllum virescens, very like B. Binnendijkii in form and arrangement, but differing in colour; he also sent several Odontoglossums.

E. R. ASHTON, Esq. (gr. Mr. C. V. Kent), Broadlands, Camden Park, Tunbridge Wells, showed the fine Laelio-Cattleya Anaconda, with a spike of six yellow and ruby flowers (Cultural Commendation); Miltonia vexillaria var. Snowflake, M. Cardinal Wolseley, Odontoglossum crispum var. Oakwood Sunrise, Odontioda Chanticler and other good things.

Mr. F. J. Hanbury, Mr. Lionel de Rothschild and Mr. Robert Paterson also showed individual plants.

In Messrs. Sanders' group there were capital examples of Laelio-Cattleya Isabel Sander, a large plant of Brasso-Laelio-Cattleya King Emperor, Thunias, Odontiodas, Miltonias, Brassia Lanceana, Masdevallia muscosa, Vanda Stangeana, Lycaste cruenta, Cypripedium bellatulum, C. niveum and the long-spiked Coelogyne Dayana.

A pretty display of Miltonias was made by Messrs. Cowan and Co., who exhibited beautiful plants of M. vexillaria Lyoth, M. Hyeana Butterfly, M. Lena var. magnifica, M. Hyeana, M. Bleuana var. rosea Leeana, the fine M. Albert Burrage and M. Charlesworthii.

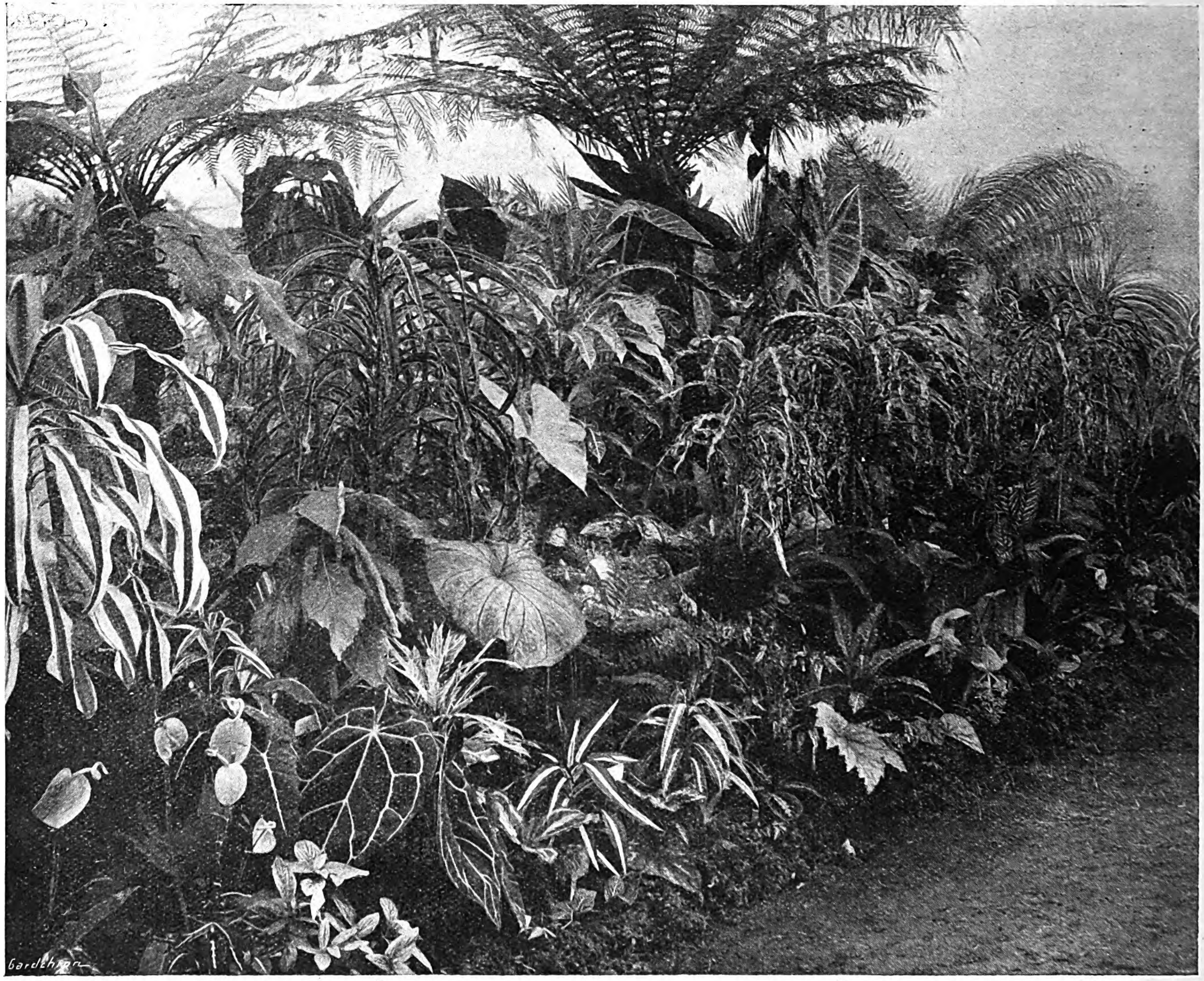


FIG. 207.—CHELSEA SHOW: MESSRS. L. R. RUSSELL'S EXHIBIT OF STOVE AND GREENHOUSE PLANTS.

Awarded the Commemoration Cup (see p. 377).

Messrs. Stuart Low and Co. contributed a group in which Odontoglossum grande was conspicuously good; with this handsome Orchid were associated such useful subjects as Cattleya Mossiae, C. M. Reineckiana, Laelio-Cattleya Canhamiana alba, L.-C. G. S. Ball, Odontiodas, the fragrant Odontoglossum citrosmum, a plant of Coelogyne pandurata and several Miltonias.

Messrs. Black and Flory showed Miltonias in great variety, their chief sorts being M. Kenneth, M. Eva, M. Princess Elizabeth, and M. Lena; they also showed Burrageara Windsor, Cattleya Mossiae Wagneri and the pretty Sophro-Cattleya Thwaitesii.

In the group set up by Messrs. Charlesworth and Co. there were handsome spikes of Odontoglossum Imperator, O. Fabia, O. Clonius var. Royal Purple, and O. Regium, with Miltonias, Odontiona Regina, Dendrobium chrysotoxum and Epidendrum campylostalix.

Floral Committee.

Present: Section A.—Mr. Henry B. May (in the chair), Mr. J. F. McLeod, Mr. Arthur Turner, Mrs. Ethel M. Wightman, Mr. William Howe, Mr. Hugh Dickson, Mr. W. B. Gingell, Mr. D. B. Crane, Mr. G. W. Leak, Mr. George Churcher, Mr. W. Cuthbertson, Mr. H. J. Jones, Mr. Courtney Page, Mr. David Ingamells and Mr. W. D. Cartwright (Secretary).

Section B.—Mr. W. J. Bean (in the chair), Mr. James Hudson, Mr. G. Reuthe, Mr. James Comber, Mr. F. J. Preston, Mr. A. Bedford, Mr. W. B. Cranfield, Lady Beatrix Stanley, Mr. C. Williams, Mr. E. H. Wilding, Mr. L. R. Russell, Mr. T. Hay, Sir William Lawrence, Bt., Mr. Charles T. Musgrave, Mr. R. C. Notcutt, Mr. R. D. Trotter, Mr. Gerald W. E. Loder, Mr. E. A. Bowles and Mr. N. K. Gould (Secretary).

AWARDS OF MERIT.

Papaver nudicaule, Barton Mills Strain.—A large vase of especially handsome flowers was shown. This strain appears to be exceptionally robust, and the large substantial flowers were of good shades of colour and pure white. Shown by Mr. Robert Stanford, Barton Mills, Mildenhall, Suffolk.

Papaver orientale var. Pride.—The flowers have the distinct, toothed bracts which are associated with the Caucasian Papaver bracteatum which, by some authorities, is considered to be merely a form of P. orientale. It is a robust variety and the deep scarlet flowers have black blotches at the base of the petals. Shown by Mrs. Talbot (gr. Mr. Akers), Haileybury Lodge, Haileybury.

Embothrium coccineum.—This most beautiful flowering shrub is well-known to all who have visited Cornish gardens during its flowering season, and goodly sprays of the brilliant scarlet flowers are shown annually in the R.H.S. Hall and at Chelsea. Unfortunately, it is not hardy, except in the most favoured parts of the country. This evergreen was introduced by William Lobb in 1853, and it is illustrated in *Bot. Mag.*, t.4856. Shown by Mrs. Bolitho, Trewidden, Penzance.

Syringa yunnanensis.—This is a distinct and attractive Lilac of graceful habit. It has opposite, ovate-acuminate leaves, much of the general appearance of those of Clerodendron trichotomum, but with reddish veins as well as stalks. The erect racemes—similar to those of C. Wilsonii—are large and much branched, and freely set with small, tubular, soft pink flowers. The unopened flower buds are much darker in colour than the open flowers. Shown by Collingwood Ingram, Esq., Benenden.

Ranunculus libanotes.—The award to this plant is subject to verification of the name. From a little distance the flowers have the appearance of those of an Anemone. The colour is a vivid cardinal and there is a black centre. Shown by E. England, Esq., Woodland Manor Road, Barnet.

Venidium fastuosum.—This is a handsome half-hardy annual from South Africa, with flowers nearly as large as those of a Gaillardia. They have mostly two and sometimes more rows of ray florets which are of orange shades, with deep crimson markings towards the base which make a distinct zone. According to Aiton, this handsome species was grown at Kew from seeds sent by Masson, in 1795, but there is no specimen of it in Masson's collections at Kew and South Kensington. Venidium fastuosum is figured in *Bot. Mag.*, t. 9127. Shown by Mr. T. Hay, Hyde Park, London.

Iris sibirica Caesor.—This variety was raised by Mr. Cleveland Morgan in the United States of America. The flowers are rather larger than those of the type, and lack the distinctive markings on the base of the falls. The flowers are of blue colour, of velvety texture on the falls, and of metallic lustre on the standards. Shown by Lady Byng of Vimy, Thorpe Hall, Thorpe-le-Soken.

Iris sibirica Otawa.—In this variety the markings of the falls extend more than in the species, giving a distinct blue, lip-like appearance. Shown by Lady Byng of Vimy.

For Trial at Wisley.

Iris W. R. Dykes.—A beautiful large-flowered variety. The standards are yellow and the deeper-coloured falls are lightly lined with gold. Shown by the Orpington Nurseries.

Iris Kenza.—Of similar type to the above, but the standards are yellow and the falls primrose-coloured.

Iris Grey Lady.—A good silvery-lavender flower, with a gold crest. This and the above were shown by J. L. Pilkington, Esq., Tower Lee, Woolton, Liverpool.

Iris Ramilaks.—A mauve-coloured flower, raised from the varieties Princess Beatrice and Caprice. Shown by W. Sadler, Esq., Streatham.

Iris Canadian Gold.—A medium-sized, yellow flower. Shown by Lady Byng of Vimy.

Iris Wynn Hellings.—A fine seedling from I. Astronome Nordmann. It has a tall spike of lavender flowers which have a distinct gold crest.

Antirrhinum C. H. Herbert.—A good spike of orange-coloured flowers which are tinted with rose on the outsides. Shown by Messrs. W. H. Simpson and Sons.

Groups.

On a large table space, Messrs. Robert Bolton and Son arranged one of the finest collections of Sweet Peas that has ever been staged. The many flowers were all of superb quality and arranged with great taste and skill. The chief varieties were Magnet, of glowing pink shades; Montrose, a new variety of rich pink colour; Valetta, a shining scarlet-cardinal; Royal Pink, salmon-pink; R. F. Felton, lavender with a charming flush of colour on the standards; Mammoth, of lovely colouring; Cameo, cream ground flushed with pale pink; Blue Bell, a large, pale blue with reddish colour on the standards; Colorado, of vivid orange colour; the incomparable Mrs. A. Searles, and the Picotee-edged Sunkist. Besides the above there were some beautiful seedlings.

Opposite their group of Antirrhinums, Messrs. Dobbie and Co. had vases of several of their good novelties. The chief were Flamingo, of glowing scarlet-cerise colour; Kitty Pierce, pale pink shades; Idyll, a bright cream-pink; Reflection, a waved dark mauve; and Winnie Morse, very pale cream-pink. A large collection of Sweet Peas displayed by Messrs. Alex. Dickson and Sons included large, arched baskets of Blue Bird, Charming, George Shawyer, Purple Perfection, Angéle, Mrs. H. J. Wright, Hawlmark Maroon, Britannia and Mammoth.

A splendid collection of Antirrhinums staged by Messrs. Dobbie and Co. illustrated a most desirable strain and first-rate cultivation. The spikes were exceptionally robust and long, and bore upwards of twenty fully-opened flowers on each. The principal varieties were Eclipse, crimson; Enchantress, pink; Maize Queen, rich yellow shaded with bronze; Fascination, pale rose, coccinea, Mauve Queen, Yellow King and White King.

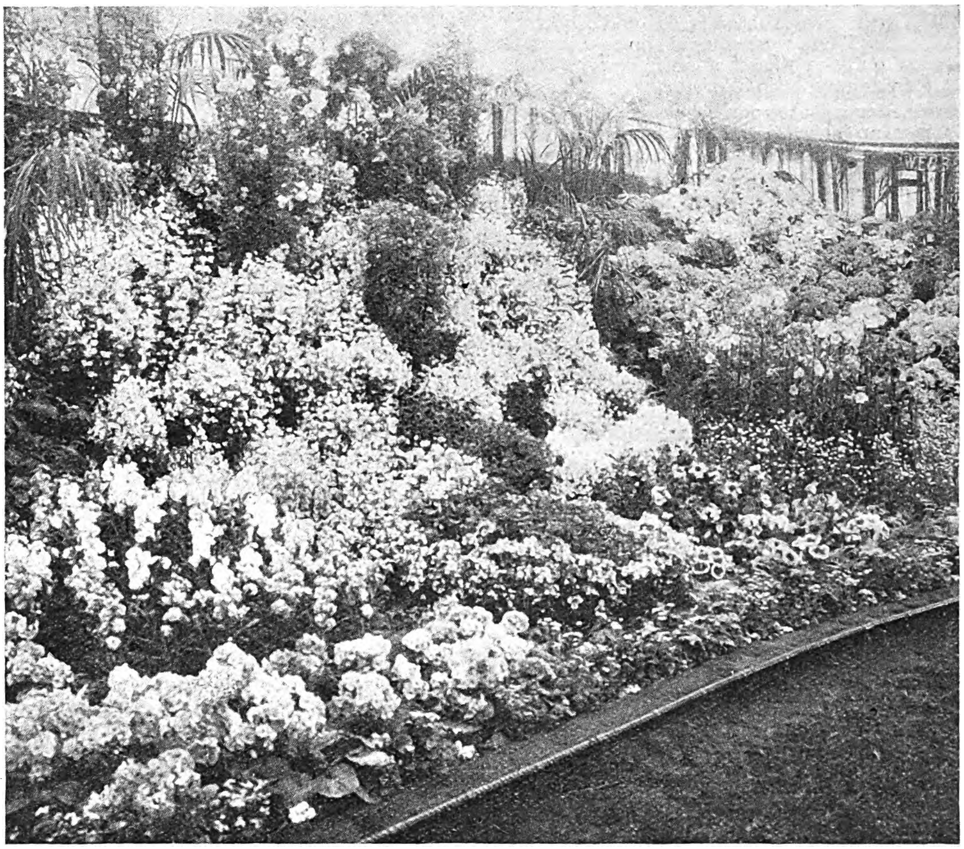


FIG. 208.—CHELSEA SHOW: MESSRS. E. WEBB AND SONS' EXHIBIT.
Awarded a Silver-Gilt Medal (see p. 377).

In the Orchid Annexe, Messrs. R. and G. Cuthbert had a good collection of Tritonia Prince of Orange. J. H. Batty, Esq. (gr. Mr. G. Stacey), Chorley Wood Cedars, Chorley Wood, Hertfordshire, had a small but exceedingly interesting collection of seedling Hydrangea Hortensia. The trusses were all of great merit, and the varieties included Mrs. David Ingamells, deep pink; Lebanon, a very large head of soft pink flowers; and Autumn Tints, of fascinating bronzy-green and pale yellow.

Near the Tea Annexe, Messrs. W. H. Simpson and Sons filled the corner with good spikes of Antirrhinums and Lupins. The former included the varieties Delight, Tunic, Rosalind and Mayflower, while the chief Lupins were Carmine Queen, Orange King and Princess Elizabeth. Messrs. Bakers had large pot plants of Astilbe illustrating the several types and some good rich colours. Mr. W. E. Skilton staged Gloxinias from seed sown during August of last year. Messrs. L. R. Russell, Ltd. had a group of very bright Lilium sutchuenense, Martagon Lilies, Abutilon Thompsonii, Cannas and foliage Begonias.

A valuable bedding Antirrhinum in relatively small pots was shown by Messrs. Sutton and Sons. These plants bore many spikes of orange-red flowers. They also showed exceptionally good Zinnia flowers of distinct colours, and included a large vase of art shades. Messrs. B. Ladhams, Ltd., had a good collection of such border flowers as Trollius Golden Queen, Oriental Poppies, Lupins and Heucheras. Oriental Poppies were also shown by Mr. H. Prins, who grouped them with Pyrethrums and Irises. The Merivale Nurseries had a small collection of alpines.

Particularly well-grown plants of Campanula Pride of Exmouth, semi-double, blue; Campanula Donald Thurston, single, pale blue, and the interesting Salvia leucantha were shown by the Maytham Gardens. Mr. T. Carlile had very good Delphiniums in pots. He included the varieties Loddon Guard and Mrs. T. Carlile, of silvery lavender and blue shades. Mr. Stephen Sims and Miss Gladys House had rock garden exhibits.

A large space was filled by Messrs. Kelway and Son with Delphiniums, Pyrethrums and Paeonies. The Delphiniums included Mrs. K. H. Wilson, dark blue; Star of Langport, pale blue, and Smoke of War, a dark smoky blue. The chief single Paeonies were Lady Ley, pink, and Lady Bellew, pale pink. Mr. F. Gifford had many flowers of the glowing cardinal Paeony Fire King, with Sunbeam, and the double albiflora grandiflora.

The Central Garden Supplies set up a collection of Kalmias, Aquilegias, Violas and garden Pinks. Mr. Clarence Elliott made a small rock garden in which he planted Papaver alpinum, Erodium hybridum roseum, Epilobium macropus and other suitable alpines. Mr. G. W. Miller staged Trollius, Pyrethrums and Tritomas. Messrs. R. H. Bath, Ltd., had a good group of Pyrethrums, Lupins and Irises. In his rock garden exhibit, Mr. Gavin Jones placed dwarf Phloxes, Saxifrages and Cypripedium calceolus. Messrs. Maxwell and Beale used various Primulas, Mimulus, Gazanias and Incarvillea Delavayi in their rock garden exhibit. Armeria Vindictive of rich colour, dwarf Thymes, Linum arboreum and other plants, were employed by Messrs. Pulham and Son, and Mr. J. Robinson showed Veronicas, Violas and Aster alpinus roseum. Exhibits of alpines were also made by Messrs. M. Prichard and Sons, Messrs. Tucker and Messrs. W. H. Rogers and Sons.

In a good group, mostly of Polyantha Roses, Messrs. Walter Easlea and Son showed the varieties Orange Perfection, Superba and Golden Salmon. Mr. J. H. Pemberton had good sprays of Rosa Moyesii, R. californica, R. spinosissima and R. lutea.

There were several small exhibits of Carnations including a bank of choice blooms arranged by Messrs. Allwood Brothers, in which the most striking sorts were the vivid Maud Allwood, Spectrum, Laddie, Maine Sunshine, White Pearl and Sussex Crimson; there were also bowls of various Allwoodii varieties and vases of numerous hardy border sorts.

Messrs. C. Engelmann, Ltd., showed such varieties as Katja, Red Laddie, Mrs. Hamilton

Fellowes, Eldora and Topsy in splendid condition, while others included in their attractive exhibit were Carola Striata, Hebe, Master Michael Stoop, Saffron and Laddie.

Messrs. Stuart Low and Co. made special features of the large-flowered White Pearl and Eileen Low; also Happidais, Topsy and Philip Sassoon, while there were good examples of Spectrum, Lord Lambourne, Circe, and the lovely Malmaison, Hon. Charlotte Knollys.

Irises were a prominent feature of the show, and there were several magnificent groups, both of bearded flag Irises and bulbous sorts.

Messrs. John Waterer, Sons and Crisp, Ltd., arranged a large bank of bearded varieties. There were masses of Asia, Ambassadeur, and the rich purple Furstin Lonyay, while such well-known varieties as Prosper Laugier, Mercedes, Alcazar, Flaming Sword, Mrs. H. Darwin, Rhein Traube and Corrida were also well staged. Other choice sorts included Ballerine, lavender with purple falls; John Waterer, pale lavender with deeper coloured falls; and Delila, with cream standards and reddish-purple falls. There were several choice unnamed seedlings but the finest of their new varieties was undoubtedly John Waterer.

Another excellent group was staged by Messrs. G. Bunyard and Co., the vivid purple Sirius and Corrida being especially noticeable. Lorely, Ambassadeur, Castor, a quaintly marked seedling; Crusader, Souvenir de Madame Gaudichau, and Mrs. H. F. Bowles were other choice subjects; while Rotorua, Madame Schwartz, Magnifica and Duke of Bedford also attracted attention.

A mixed group, composed of both bulbous and bearded Irises, with vases of a fine strain of Iceland Poppies was arranged by Mr. Herbert G. Longford. Of the bearded sorts there were vases of Flammenschwerte in good condition, but the bulbous varieties were most in evidence, and included Frans Hals, Anton Mauve, Hart Nibbric, Heemskirk, Rubens, Imperator and White Excelsior.

Messrs. Barr and Sons staged a magnificent bank of blooms in the centre of the hall, excellent taste being displayed in the arrangement. On one side there were masses of Prosper Laugier, Mithras, Caprice, Helen, Salonique, Troost, Quaker Lady and Princess Victoria Louise; and on the other, wonderful examples of Bluet and Magnifica, together with Standard Bearer, Menetrier, Souvenir de Madame Gaudichau, Gagus and Princess Beatrice. The end of the bank was composed of bulbous sorts, of which the most striking were Poggenbeek, Bleu Celeste, Huchtenburg, J. W. de Wilde and D. Haring.

A collection of choice varieties was staged by Mrs. W. R. Dykes, the richly-coloured Akbar being one of the finest. Amber was shown in quantity, and there were good examples of Troost, Cupavo, Lord of June, Fro and Peerless.

Mr. G. G. Whitelegg also showed Irises in splendid condition, including several good unnamed seedlings. Of named sorts there were Alcazar, Afterglow, Ann Page, Lord of June and Jeanne d'Arc; also Lorely and Mrs. G. G. Whitelegg.

Next to this collection was one arranged by Messrs. D. Stewart and Son, who made a special feature of Dutch Irises. There were large vases of D. Haring, white with orange-yellow markings; the purple Imperator, Rachel Ruysch, White Excelsior and Rembrandt. Also included in this group were blooms of the golden-flowered Iris juncea; and such Lilies as L. martagon album, L. Hansoni, L. pyrenaicum rubrum and L. tenuifolium. There were also good blooms of Allium Ostrowskianum and the uncommon A. Schubertii.

The Orpington Nurseries Company, Ltd., were also represented by a choice collection of Irises, among the most striking being Grace Sturtevant, Menetrier and Majestic, together with several other beautiful sorts. Grace Sturtevant was undoubtedly the gem of this collection.

Fruit and Vegetable Committee.

Present: Mr. W. Poupart (in the chair), Mr. G. F. Tinley, Mr. A. Bullock, Mr. A. W. Metcalfe, Mr. A. Poupart, Mr. E. A. Laxton, Mr. W. H. Divers, Mr. Edwin Beckett, Mr. T. Pateman, Mr. J. Wilson, Mr. P. C. M. Veitch, Mr. E. A. Bunyard and Mr. A. N. Rawes (Secretary).

There was no business of any importance before this Committee.

NEW YORK ORCHID EXHIBITION.

The third National Exhibition of the American Orchid Society was held in the Exposition Hall, Madison Square Garden, New York City, on May 10, 11 and 12. It has often been stated that the Americans do things on a large scale, and on this occasion they staged Orchids in a manner almost unknown in European shows, and in numbers equal to, or surpassing, the Chelsea events. One of the main objects was a spectacular show to attract the general public as well as the expert. There were groups illustrating the manner in which terrestrial Orchids grow, with rocks, waterfalls and streams arranged in natural style, also groups showing how the epiphytal kinds exist, with large tree-trunks and Tree Ferns clothed with Orchids in full flower. Boldness of colour design was produced by the classes for one genus only, such as a mass of yellow produced by 150 spikes of Oncidium sphacelatum and O. splendidum; and a mass of red and scarlet, seen in the group of Odontiodas.

Albert C. Burrage, Esq., President of the Society, was the principal exhibitor, his superb group of 200 square feet winning the Gold Medal offered by the Royal Horticultural Society. This well-known amateur also staged a large group of Phalaenopsis arranged on a pyramid of marble blocks, and on the branches of two tree-like stands some ten feet in height. F. E. Dixon, Esq., Elkins Park, Pa., also had a meritorious group of species and hybrids, to which the Society's Gold Medal was awarded. Mr. Thomas Roland, of Nahant, Mass., received a similar recognition for a beautiful scene in which forest life and numerous Orchids were staged most effectively.

Oliver M. Tucker, Esq., Columbus, Ohio, was the winner in the class for the best group of hybrid Orchids of American origin, and Louis Burk, Esq., received a Silver Cup in the class for a group not over fifty square feet. Mr. George E. Baldwin won a Gold Medal for a large group in which many superb hybrids were effectively staged. Samuel Untermeyer, Esq., Yonkers, New York, and Mrs. Arthur C. James, Newport, R.I., both exhibited meritorious groups, as also did Col. H. H. Rogers, Tuxedo Park, New York. W. R. Coe, Esq., Oyster Bay, L.I., had a pretty exhibit composed of about one hundred flowers of Cypripedium acaule, and Mrs. Mary A. House, Chadds Ford, Pa., staged a well-grown set of species and hybrids.

Sir Jeremiah Colman, Bart., sent over from England a representative group which met with considerable appreciation, a specially designed Silver Cup being awarded, while his fine example of Lycaste Skinneri var. Mrs. Hamilton Smith received a Silver Medal (see p. 348). C. D. Armstrong, Esq., Pittsburgh, Pa., also staged some attractive species and hybrids.

From Duke Farms, Somerville, N.J., came a very fine lot of Cymbidiums, each spike bearing about thirty flowers, also a group of Cattleya Mossiae, with a total of 150 well-developed blooms. Messrs. Lager and Hurrell, Summit, N.J., staged an interesting group, while Mr. Ed. H. Roehrs, Rutherford, N.J., arranged a pleasing exhibit of various Orchids. Mr. W. A. Manda, South Orange, N.J., won a Silver Cup for the best collection of hardy North American Orchids, and C. M. Wooley, Esq., Greenwich, Conn., was placed first in the class for a group embracing at least six genera.

That Odontiodas can be grown successfully was proved by the group of these hybrids staged by Duke Farms, Somerville, N.J., for they had been cultivated in the United States during the past eight years. Mr. Geo. W. Butterworth arranged a pillar-like mass of Epidendrum radicans, and Messrs. Wheeler and Co. arranged a group of Cattleya Mossiae and C. Mendelii.

Joseph E. Widener, Esq., Elkins Park, Pa., exhibited a beautiful basket of cut Cymbidium spikes, also six well-flowered plants of Laelio-Cattleya G. S. Ball, averaging ten flowers on a spike, as well as a display of cut blooms. An attractive exhibit was the little group of Coelogyne pandurata, comprising eight spikes of greenish flowers, shown by Mr. and Mrs. F. E. Dixon, while Brasso-Laelia Digbyano-purpurata, staged by Samuel Untermeyer, Esq., Jonkers, New York, was in fine condition.

The Missouri Botanical Gardens arranged an instructive group on a large scale of Orchids from Panama and Central America, and in the foreground a fine lot of Cypripediums. From these gardens came seventeen flasks of Orchid seedlings, raised symbiotically, and a number of seedlings pricked out into small pots, from one year old to the flowering stage. The Joseph Manda Co., West Orange, N.J., staged an attractive group of various Orchids and Anthuriums, and Mr. John DeBuck, Secaucus, N.J., exhibited Cattleya Mossiae, C. Mendelii and C. Trianae, all well-flowered.

Mrs. William K. Dupont, Wilmington, Del., exhibited a charming group in which the central plant was a fine specimen of Dendrobium thyrsiflorum. This exhibitor won the prize offered for the most beautiful Orchid in the show, viz., Miltonia William Pitt, of rich crimson colour.

Other exhibits from the extensive collection of Albert C. Burrage, Esq., were the representative group of Dendrobiums, which was staged at one end of the vast hall; this included a very fine specimen of Dendrobium (Sarcopodium) Lyonii, with eleven spikes of bloom, and Cattleya Schroederæ with fifty flowers. Mention must also be made of the finely-grown plant of Dendrobium thyrsiflorum, with twenty flower spikes, shown by Mrs. W. K. du Pont; of Oncidium luridum, staged by Mr. Ed. H. Roehrs; and of Vanda coerulea, with a spike of twelve flowers, from W. R. Coe, Esq.

Oliver M. Tucker, Esq., Columbus, Ohio, was placed first for the best collection of Phalaenopsis; and in the class for the best Coelogyne, W. H. Jewell, Esq., New Rochelle, New York, won the first prize with C. pandurata, bearing a spike of sixteen flowers. Mr. Jewell also received much praise for a very pretty group of Orchids staged in a pergola-like structure.

Ed. H. Lincoln, Esq., Pittsfield, Mass., staged the pretty Calypso bulbosa and other hardy species, while Cypripedium reginae was plentifully exhibited by the same amateur. The very rare Phalaenopsis Harriettae (amabilis × violacea), was shown by Louis Burk, Esq., Philadelphia.

Mr. Gurney Wilson, Secretary of the R.H.S. Orchid Committee, acted as Chairman of the Judges, and gave a "Talk on Orchids" from the New York Radio Station.

[The delay in publishing this Report is due to the pressure imposed upon our space by the report of the Chelsea Show.—Eds.]

ANSWERS TO CORRESPONDENTS.

Begonia Gloire de Lorraine.—*N. C. O.* There were no pests or disease present on the leaves submitted. Probably some small ground beetle has been biting the leaves.

Culinary Peas Damaged.—*J. H. W.* The foliage sent has been checked by frost. The reason why one batch of plants should be affected and not others growing quite near is due, no doubt, to varietal susceptibility. However, from the appearance of the shoots sent, we think the plants should recover.

Names of Plants.—*H. W.* Lotus peliorhynchus.—*A. E. R.* 1, Cotoneaster rugosa; 2, Pyrus Aria; 3, Veronica gentianoides.—*D. C.* Tulip Madame Krelage.

Raspberry Canes Failing.—*J. B.* The Raspberry canes sent do not appear to be affected by disease, and we agree with you in suspecting that the trouble is due to late spring frosts.

Communications Received. — W. C. M.—C. J.—W. W. N.—L. B.—A. C.—H. F. B.—A. E. R.—T. H.—L. B. C.—G. M.—M. W.—K. W.—C. E. B.—G. H.—S. A.—S. H. N. V.—E. M. B.—L. S. A.

THE
Gardeners' Chronicle

No. 2164.—SATURDAY, JUNE 16, 1928.

CONTENTS.

Alpine garden—
  Campanula Aucheri 431
  Campanula Laurii... 431
  Parrya Menziesii ... 431
  Pelargonium Endlicherianum ... 431
  Polygonum vacciniifolium 431
Apiary notes 437
Apple breeding in British Columbia ... 427
Apple scab, control of 426
Banana cultivation in Jamaica 434
Books, notices of—
  A British Garden Flora 436
Bulb garden—
  Triteleia uniflora ... 430
Bush fruit culture ... 437
Fertilisers, new ... 438
Flower garden—
  Perpetual-flowering Carnations outdoors 430
  Venidium fastuosum 430
French Horticultural Congress 426
Fruits, on thinning ... 425
" Gardeners' Chronicle" seventy-five years ago 427
Glasgow Flower Show 426
Hall, Mr. Cecil ... 426
Hampton Court, flowers at 425
Hardy flower border—
  Doronicum caucasicum 430
  Podophyllum Emodi 430
  Poterium obtusum 430
Kew, objects of special interest at 425
Legacies to gardeners 425
Lime, on the use of ... 432
Locke Park, Barnsley 425
Market fruit garden ... 437
National Sweet Pea Society's Outing ... 426
Node Gardens, Welwyn 427
Obituary—
  Charlton, Mr. Arthur 442
Primula, the genus ... 436
Public parks and gardens 439
Rock Garden, Crichton Royal, Dumfries ... 433
Societies—
  Berlin Spring Show 442
  Dublin Naturalists' 441
  Iris Show 439
  Leeds Paxton ... 441
  Leicestershire Agricultural 442
  Reading and District Gardeners' ... 441
  Wakefield and North of England Tulip 441
Sweet Pea, Dutch, exhibition in July ... 427
Smellie, Mr. J., honour for 426
Tomato plants diseased 442
Trees and shrubs—
  Pentstemon Menziesii var. Scouleri 430
  Spartium junceum... 430
Trinidad Botanic Gardens... 426
Tulips, " breaking " in 435
Week's work, the ... 428

ILLUSTRATIONS.

Campanula Aucheri 431
Hall, Mr. Cecil, portrait of 426
Iris sibirica var. Caesor (left), and I. s. var. Otawa ... 429
Polygonum vacciniifolium 433
Tulips, " breaking " in 435
Venidium fastuosum 427

SUPPLEMENT PLATE.
Locke Park, Barnsley.

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 60·2°.

ACTUAL TEMPERATURE.—

The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London, Wednesday, June 13, 10 a.m. Bar. 30·1. Temp. 65°. Weather, Fine.

On Thinning Fruits.

GARDENERS, except the lucky ones with sheltered gardens, have not of recent years enjoyed any too large measure of good fortune with respect to top fruit crops. Neither are reports of this year's prospects too encouraging. Yet capriciousness of season, although it may blast many a hope and many a crop, does sometimes operate less maleficently. For it is the attribute of caprice generally to withhold, but sometimes to bestow benefits. An instance of bestowal on an amazingly liberal scale is before our eye. The orchard is a small one planted some seven years ago with bush trees, mainly, and some standards. Up to now the yields of fruits, as was to be expected, have been light, but this year promises to produce most bountiful crops. The frosts and cold winds seem to have conspired to ignore the trees of this orchard; bees have flocked to it with the result that Pears and Apples, and to a lesser degree, Plums, are all bearing with an astonishing prolificness. Of all these trees so heavily laden with young fruits, two large bush-trained Conference Pears are the most impressive. It would seem as though every blossom of every fruit bud had set a fruit with the result that on each spur, standing up like tapering brown candles, are from five to ten fruits. No less prolific, albeit less spectacular, are some of the bush Apples, as, for example, Upton Pyne and Ellison's Orange. They also appear to have set every blossom on each truss. Nor, as time goes on, have the trees, in spite of the drought shown any intention to part with their burden of fruit. Each of the group of fruitlets goes on growing and swelling instead of all save one giving up the struggle and dropping off. Hence the heavy, albeit pleasant work of thinning has had to be undertaken. In this work nice problems are encountered—which fruit shall be taken and which left; what are the probable losses due to caterpillars which in spite of carbolinium winter sprays are by no means absent! Should the thinning be once for all and drastic, or should it be gradual? To leave one fruit only on each truss is to have too confiding a faith in good fortune, to leave three lightens too little the burden which the tree has to bear. Behind these little problems lie other larger ones; surely by a prompt application of fertiliser something might be done to prevent this year's profusion from being followed by next year's scarcity! Both Upton Pyne and Ellison's Orange are like so many other Apples, biennial bearers. Indeed, in this orchard there stand two fully fertile and two quite barren specimens of the latter variety. If a timely application of fertiliser could prevent this alternation of fruitfulness and unfruitfulness, it would be a real benefit to orchardists. But few of us know whether the fertiliser to be applied to top fruits should be one containing nitrogen only, or one like the new concentrated fertiliser "Anno-phos," which contains both nitrogen and phosphate, or a complete fertiliser compounded of potash, as well as of nitrogenous and phosphatic ingredients. The advice of a great man on such an occasion of mental doubt should guide our practice. It was "don't think, try"; and so the happy orchardist whose prospect of good fortune we have described is testing out the various fertilisers, and has promised to give us the result of his experiments if they appear to be worth while. In the meantime he is busy thinning. Beginning with garden scissors, but always ending with the finger and thumb—a more deft tool, but which leaves the members of it with blackened finger nails—for the young fruits are full of oxidasic enzymes which, when liberated, blacken the chromogens contained in the fruits, and these black juices stain everything with which they come into contact. The fruitfulness, it may be added, is not confined to the established trees but is manifest no less in many cordons budded last year on Dwarfing (Type IX) Apple Stocks. There the problem of what to leave is easy of solution. One or two fruits may remain as earnest of the future; the rest must go.

Locke Park, Barnsley.—This beautiful park in a busy Yorkshire town is greatly appreciated by the inhabitants, who never fail to admire the beauty of the summer display of flowers provided each season by Mr. T. Wells, the able Superintendent. A general view of the Quarry Gardens is depicted in the Supplement Plate presented with the present issue. The beds in the foreground are filled with Lobelia fulgens with a ground-work of Heliotrope Lord Roberts and Alyssum minimum. Around the fountain the beds are filled with dwarf and standard plants of Pelargonium Paul Crampel, with Centaurea gymnocarpa and an edging of Tagetes Golden Ring. Tall Dahlias are used in the borders on each side of the winding path, and these have a foreground composed of Dahlia Coltness Gem, Calceolaria amplexicaulis, brown and yellow shrubby Calceolarias, silver-leafed Pelargoniums, Iresines, Ageratum, Lobelias and white Alyssum. Beyond the fountain the beds are devoted to carpet bedding—a never failing attraction. Our illustration depicts the Quarry Gardens at the end of the summer of 1927.

Flowers at Hampton Court.—At this season of the year one expects to find a profusion of flowers in a garden, and in this respect visitors to Hampton Court Gardens are not disappointed, for there is a great wealth of blossom to welcome them. Although the Tulips are, with few exceptions, finished, their places have been taken by many beautiful annuals, and the Rhododendrons and Azaleas, which have been responsible for a brilliant display, are in turn giving place to Roses and other summer flowering subjects. Although the floral beauty of the Wilderness has passed, there is an air of peace and restfulness beneath the giant Horse Chestnuts, while here and there stray plants of Philadelphus, Diervilla, and the purple-leaved Plum, together with several Rhododendrons well laden with blooms, add colour to the scene. The long mixed border is, as usual, a mass of colour. Here are large groups of Anchusa italica Dropmore, and Opal; beds of the lovely pink and white Acrocliniums intermixed with Forget-me-nots; heavily-flowered Schizanthuses in many shades and varieties, and groups of fine specimen Heliotropes. Pansies in many colours have been employed with effect, as also have the lovely Collinsia grandiflora alba, Viscarias, and Rhodanthe maculata alba, one of the Everlasting Flowers. Nemophila insignis, the Californian Bluebell, with vivid blue, white-centred flowers, is very striking, and there are several large patches of Ixias, the varieties employed being Mozart, Conqueror and Vulcan. Myosotis Royal Blue has been used in conjunction with the rose-coloured Saponaria calabrica, and there are masses of Calceolarias of various vivid shades, together with Mignonettes, Cineraria stellata in variety, and the large-flowered Aubrietia Rose Superbe. The numerous formal beds are all bright with flowering subjects. Some contain Pelargoniums, others Anchusas, and others Cinerarias, and one bed is resplendent with tall Heliotropes intermixed with the orange-flowered Streptosolen Jamesonii. Two rounded beds are carpets of Aubrietia Dr. Mules, another is a brilliant mass of Cheiranthus Allionii; two are filled with freely flowered plants of varieties of Salvia splendens, others with Schizanthuses, and yet another is composed of a salmon-coloured Pelargonium interplanted with the grey Leucophytum Brownii. In the King Henry VIII Garden are a number of shrubs in bloom; various forms of Rosa rugosa, Philadelphuses, Cytisuses, and heavily-flowered bushes of Viburnum plicatum tomentosum, together with Lupins, Papaver orientalis, Foxgloves and Paeonies. The Sunken Garden is gay with such subjects as the bulbous Iris Imperator, Cheiranthus Allionii, Heucheras, Anchusas, Aubrietias, Roses and various annuals.

Legacies to Gardeners.—The late Miss E. S. Soutter of Eastlake House, Park Road, Regent's Park, who died on March 18, bequeathed £50 per annum to her gardener, Mr. Gattrell, to be continued at his death to his present wife, if she survives him.—The late Mr. George Denton, of Riverdale Road, Sheffield, who died on January 18, left £50 to his gardener, Mr. Stothard.

Objects of Special Interest at Kew.—The notice boards displayed at the principal entrance gates indicate that during the present week features worthy of special attention by visitors in the Royal Gardens, Kew, are as follow:—"Haemanthus Katherinae," a number of plants flowering freely planted out in the Mexican House; "Tropical Water Lilies," in Houses 10 and 15. In the former the blue Water Lilies, Nymphaea gigantea and N. zanzibarensis, are in splendid condition. "The Iris Garden;" the "Siberian Irises," by the lake-side; the "Rock Garden," where hardy Primulas are a feature, and "the Rhododendron Dell," where the variety Essex Scarlet calls for special mention. In the large circular stone bed at the end of the Broad Walk near the pond, Cheiranthus Allionii is very effective with a groundwork of the violet-blue Aubrietia J. S. Baker. In the Rose Dell near the Pagoda the Hybrid Musk Rose Nur Mahul with cramoise-coloured blooms is of outstanding merit.

Mr. John Smellie Honoured.—On May 31, a party of about sixty assembled in the evening at the Cadora, Glasgow, to honour Mr. J. Smellie, on the occasion of his seventieth birthday. Mr. John Cairns presided, and among those present were Sir Malcolm and Lady Campbell, Sir John Reid, Mr. William Cuthbertson, Mr. R. Fife and several other prominent horticulturists. Mr. Smellie was presented with a gold-mounted walking-stick and a wallet of Treasury notes, which bore the inscription, "Presented to Mr. John Smellie by his Horticultural friends on his seventieth birthday, in recognition of his services to Horticulture." His daughter, Miss Smellie, was presented with a pearl necklace. Mr. Smellie is a prominent exhibitor throughout the British Isles. In his early days he was a most successful exhibitor of Pansies and Violas, and later of Dahlias and early-flowering Chrysanthemums. In 1910 he became keenly interested in Sweet Peas, and with these he continued his triumphs all over the country. In recent years, as Secretary of the Scottish National Sweet Pea Society, he has rendered valuable service to the Sweet Pea-loving community, and his management of the Society's Trials at Helensburgh has met with marked success. We join with his many friends in congratulating Mr. Smellie upon his success, and wish him many years in which still to enjoy his passionate love of beautiful flowers.

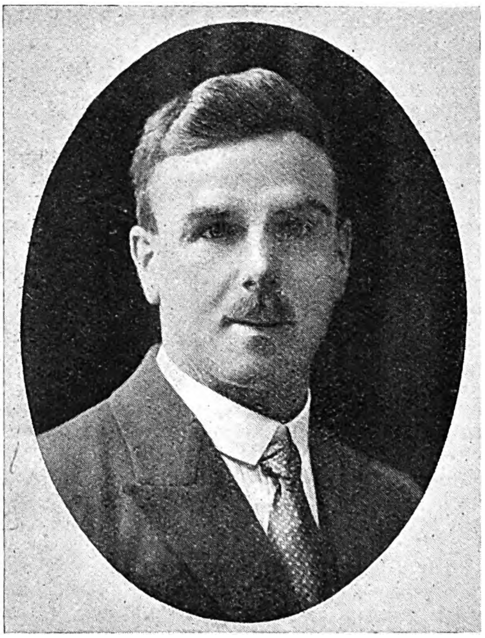
Agricultural Congress in Bucharest.—An important Congress has recently taken place in Bucharest, under the patronage of the Regency and the Government of Roumania, with the object of initiating a campaign in favour of Wheat-growing. Other subjects considered were the new laws regarding the standardisation of cereals, and the programme of the International Agricultural Congress to be held at Bucharest next year.

The Indian Horse Chestnut at Kew.—A vigorous young tree some thirty feet in height of this distinct Horse Chestnut is flowering freely in the collection near the Refreshment Kiosk, at Kew. In height and vigour there is no reason why it should not rival the common Horse Chestnut for park and pleasure ground planting, at least in the south and west. Its greatest merit is that the flowering season is early June, a month later than the common Horse Chestnut. The masses of shining dark green leaves of Aesculus indica have quite a sub-tropical effect. The flowers are very similar in colour to the common Horse Chestnut, but they are borne in a longer and more cylindrical inflorescence. In warm, sunny seasons, such as in 1921, seeds ripen freely on the tree in question, and numbers of young plants have been raised from them.

National Sweet Pea Society's Outing.—The N. S. P. S. Outing to view the Novelty Trials of Sweet Peas, will take place on Thursday, June 28. Members will leave Liverpool Street Station at 10.17 a.m., arriving at Kelvedon at 12.22 p.m. Lunch will be taken at Messrs. E. W. King and Co.'s warehouse, and after lunch the party will proceed to the Trials—which Mr. E. W. King is conducting on behalf of the Society—and afterwards make a tour of the firm's seed grounds. Tea will be provided and the return journey to town will be made by the 4.33 train from Kelvedon, reaching London at 5.48 p.m. Members proposing to attend the Outing must notify the Secretary, Mr. A. C. Bartlett, Bedford Chambers, Covent Garden, W.C.2, not later than first post on June 23.

French Horticultural Congress.—The twentieth congress of the French National Horticultural Federation is to be held at Bayonne on June 24 to 26, a date which is earlier than usual, but has been fixed so as to avoid the influx of ordinary summer visitors which arrives in the Pyrenees region about the first week in July and continues throughout the holiday season, making it both difficult and expensive to arrange the excursions and tours which are always a feature of the congress period. Among the subjects to be discussed are the shortage of experienced labour, the protection of horticultural novelties, the problem of unfair competition, and what to do with "bad payers." Three main excursions have been arranged to occupy the leisure of the congress members and their friends, one to San Sebastian, the fashionable Spanish watering place; one, with the special intention of amusing the ladies of the party while the members are in session, consisting of a round tour to the most picturesque points on the Basque coast; and a third to the celebrated town of Lourdes, passing the foot of the beautiful Cirque de Gavarnie.

Mr. Cecil Hall.—Mr. Daniel Bliss, Superintendent of the Swansea Parks, is to be complimented upon the fact that no fewer than four of his assistants have received appointments as superintendents of public parks departments, *i.e.*, at Blackpool, Salford, Bath, and now at Port Talbot. Mr. Cecil Hall received the last-named appointment on May 30. He served his apprenticeship at Colesbourne Park, Cheltenham, in the garden of the late Mr. Henry Elwes; later, he was employed at Staunton Park, Herefordshire; at Sidbury Manor, Devonshire; and at Swinfen Hall, Lichfield. He served in the army for four years during the war, and has been engaged in the Parks Department at Swansea for nine years. Mr. Hall is an enthusiastic gardener and as he is but thirty-five years of age he is likely to go far in his profession.



MR. CECIL HALL.

Wedding at Woodbridge.—The fine old Parish Church at Woodbridge, Suffolk, was on Thursday, June 7, the scene of an extremely pretty wedding, the contracting parties being William Brooks Keith, M.C., M.D., and Marion Hetty, the elder daughter of Mr. and Mrs. R. C. Notcutt, of the Nurseries, Woodbridge. The bride and bridegroom are well-known in the district, and an unusual amount of interest was evinced in the town. About two-hundred-and-fifty guests afterwards assembled for the reception at Topfields, Woodbridge.

Control of Apple Scab.—Experiments in the spraying of Apple trees with two types of Bordeaux mixture have produced results of sound practical value, judging by the account which appears in the current month's issue of the *Journal* of the Ministry of Agriculture. The experiments were carried out at the South-Eastern Agricultural College, Wye, Kent, by Messrs. W. Goodwin, E. S. Salmon and W. M. Ware, during 1927, and the varieties of Apples treated were Allington Pippin and Newton Wonder. The two sprays were ordinary Bordeaux mixture (8 lb. copper sulphate, 8 lb. quicklime, 100 gall. water), and hydrate of lime (calcium hydrate) Bordeaux mixture, and the fungicidal properties of both mixtures proved to be identical and highly satisfactory; incidentally, the latter is much easier to make. Similar plots of both varieties of Apples were sprayed three times, and three control (unsprayed) plots were left adjoining those sprayed. The attack of the scab fungus during the wet summer of 1927 was severe and the percentage by weight of affected fruits on the control plots was ninety-three in the Allington Pippins, and eighty-six in the Newton Wonders. The percentage by weight of scab-affected Apples in the sprayed plots was, with the ordinary Bordeaux mixture, in Allington Pippin twelve, and with the hydrate of lime mixture twelve; while with Newton Wonder it was twelve and fourteen respectively. No appreciable leaf-scorch was caused on either variety by the spraying, and russeting of the fruits occurred only to a very slight degree.

American Fruit and Rose Stocks Conference.—A Conference has been called by the Federal Horticultural Board, to be held at the United States Department of Agriculture, Washington, on Wednesday, June 27, for the purpose of considering the advisability of placing further restrictions on the importation of fruit and Rose stocks, or any classes of them. With this purpose in view, investigations have been conducted by the American Department of Agriculture, and the results of these investigations, both on the subject of the possibilities of production and the present availability of fruit and Rose stocks, will be presented at this Conference. It is understood that the subjects of Rose stocks and fruit stocks will be dealt with separately, both in the discussion and in any subsequent official action.

Glasgow Flower Show.—The flower show to be held in the Kelvin Hall, Glasgow, on August 28, 29 and 30, promises to be one of the finest seen outside of London. The size and spaciousness of the new Corporation edifice will lend itself admirably to a large display of flowers, rock gardens, horticultural implements and everything pertaining to the garden. There is every prospect that nurserymen from all parts of the country will exhibit, as applications for space are coming in freely. There will be at least nine rock gardens, as well as several water gardens. The total prize money offered amounts to £1,000, exclusive of numerous Cups and other trophies. The exhibition will be conducted under the auspices of the Glasgow and West of Scotland Horticultural Society in conjunction with the Glasgow Corporation. Applications for space should be made to Mr. Cecil Sommerville, General Manager, Kelvin Hall, Glasgow.

Estimates of Black Currant and Raspberry Crops.—The Ministry of Agriculture has received from its crop reporters the following estimates of the probable yield of Black Currants and Raspberries for this season. The reports are based on the condition of the crops on June 1:—Black Currants: Kent—Cranbrook and Tonbridge district, 9 cwts. per acre; Sittingbourne district, 3½ cwts.; Faversham district, 15 cwts.; Malling and Dartford district, 7½ cwts.; Worcestershire—north-west district, 16½ cwts.; Evesham district, 10 cwts.; Stourport district, 10½ cwts.; Cambridgeshire, Wisbech district, 6 cwts.; Norfolk, 8 cwts. Raspberries: Kent—Cranbrook and Tonbridge district, 25 cwts.; Sittingbourne district, 7 cwts.; Faversham district, 20 cwts.; Malling and Dartford district, 12 cwts.; Middlesex, 33 cwts.; Worcestershire—north-west district, 15½ cwts.; Evesham district, 18 cwts.; Stourport district, 18 cwts.; Cambridgeshire, Wisbech district, 20 cwts.; Norfolk, 10 cwts.

Trinidad Botanic Gardens.—The newly-issued *Guide* to the Royal Botanic Gardens, Trinidad, is written by Mr. R. O. Williams, the Superintendent. An excellent plan shows the position of the nineteen different sections, and each section is described and its principal plants referred to, often with observations relative to their economic or decorative value. The *Guide* is illustrated and contains an excellent index. The history of the Trinidad Botanic Gardens is told briefly as an introduction, and from this it appears that Sir Ralph Woodford established the Gardens in 1818, on the site of an old, abandoned Sugar estate. Lockhart was the first botanist in charge, 1818-1846, and he visited Venezuela, discovering Humboldt's Cow Tree (Brosimum utile) and the Saman (Pithecolobium Saman), which, with many Orchids, he introduced to Trinidad. Lockhart commenced the cultivation of plants of economic value and the Gardens flourished during the governorship of Lord Harris. Purdie succeeded Lockhart in 1846, and when he died in 1857 he was buried in the Gardens, where a granite column was erected to his memory. Dr. Crueger succeeded Purdie, and was in turn (1864) succeeded by Mr. Henry Prestoe, who had charge of the Gardens for twenty-two years. Mr. J. H. Hart followed in 1887, and during his term of office the St. Clair Experiment Station was added. Mr. Carruthers succeeded Mr. Hart in 1909, and Mr. R. O. Williams became Superintendent in 1922, after having been Curator and Acting Superintendent. The Gardens are sixty-three acres in extent, and from 130 feet to 250 feet above sea-level. Government House, a handsome structure, stands near the flower garden.

Dutch Sweet Pea Exhibition in July.—On July 5, 6 and 7 next, the Exhibition of the Netherlands Sweet Pea Society is to take place at Bilthoven, and the preparations for this national event are already well advanced. The four premier awards are expected to elicit keen competition, namely, the Enchantress Cup, which will this year be competed for for the third time; the Cup given by the California firm of Messrs. C. C. Morse and Co.; the Cup presented by Messrs. E. W. King and Co., of Coggeshall; and the one offered by the Dutch newspaper, *Het Volk*, for the best exhibit sent collectively by amateur gardeners. Besides these special awards many other prizes are offered.

The Node Gardens, Welwyn.—We learn that Mr. and Mrs. Carl Holmes will throw open to the public their beautiful gardens at The Node, Welwyn, Hertfordshire on July 4 and August 15.

Apple Breeding in British Columbia.—Apparently the most important deficiency in the commercial Apple plantings in British Columbia is the shortage of good winter varieties. Winesap and Newtown Pippin have been planted in quantity, but the area in which they thrive is somewhat limited. Following upon this urgent need for first-class varieties, an Apple breeding project was commenced at the Experimental Farm, Summerland, in 1924, and reports from this station show that valuable work is being done in this direction. Each year controlled crosses have been made, using such varieties as McIntosh, Delicious, Newtown Pippin, Winesap and Rome Beauty, and there are now several hundred seedlings of known parentage growing at the Station. In the course of the breeding work, under local conditions it was found that very little pollen is produced by McIntosh, and practically none by Winesap; the other three varieties are, however, excellent pollen-producers. This information has suggested the advisability of mixed planting to secure proper pollenation.

Appointments for the Ensuing Week.—Tuesday, June 19: Royal Horticultural Society Committees meet (two days); Grand Yorkshire Flower Show and Gala (three days). Wednesday, June 20: Romsey Gardener's Association's outing; Sussex County Agricultural Society's Exhibition (two days)

"Gardeners' Chronicle" Seventy-five Years Ago.—*Royal Botanic, Regent's Park.*—The second exhibition of the season, held under the auspices of this Society, took place on Wednesday last. The weather was most propitious, and altogether the show was a good one for June. As usual, one long tent was entirely filled with Orchids and Pelargoniums, both of which were again produced in admirable condition. Stove and greenhouse plants were, perhaps, scarcely so plentiful as they were in May, Mrs. Lawrence's fine collection from Ealing Park being absent; this deficiency was, however, in some measure made up by one or two others showing larger collections than they did on that occasion. Cape Heaths were numerous and fine, and there were some Azaleas; but their glory had almost departed, and there were few Cacti. Roses in pots, fine as they were this time, were certainly not near so brilliant as they were on the last occasion. Some fruit was shown, and among it we remarked excellent examples of Muscat and Black Hamburgh Grapes. Three bunches of the former, from Mr. Bradley, were particularly good. A few Pineapples were also produced, together with some good Peaches and Nectarines, the best of which came from Mr. Fleming; two or three dishes of Strawberries, one dish of Cherries, some Melons and a collection of Citrons. As most of these things, however, as well as all the more important plants assembled on the occasion, may be expected to be at Chiswick this day, we defer offering any further remarks on this exhibition until next week, when anything not produced at Chiswick, and requiring special report, will receive attention. We take this opportunity of mentioning, however, that the exhibition of American plants provided by Mr. John Waterer, Messrs. Standish and Noble and Mr. Baker was very nearly in perfection, and as gay as it could possibly well be, furnishing an addition to the attractions of the day that appeared to give universal satisfaction. As much, we fear, we shall never be able to say of the Rose show. The plants are, however, well covered with buds, and promise to be better than they were last year.

Publications Received. — *Some Nitrogen Problems*, by F. C. O. Speyer; *Fertiliser Problems and Prospects in India*, by T. H. J. Carroll; *Research and Education in Relation to Practical Farming*, by Sir Frederick Keeble; *The Chemistry of Intensively Treated Grassland*, by H. J. Page. All published by Nitram, Ltd., 28 and 30, Grosvenor Gardens, S.W.1. *British Plant List*, containing the Spermophytes, Pteridophytes and Charophytes, by G. Claridge Druce; T. Buncle and Co., Arbroath. *A Glossary of Botanic Terms*, by Benjamin Daydon Jackson; Gerald Duckworth and Co., Ltd., 3, Henrietta Street, W.C.2. Price 15s. net. *Practical Gardening for Children*, by Ottoline Marshall; The Sheldon Press, Northumberland Avenue, W.C.2; price 1/6. *International Review of Agriculture*; Printing Office of the International Institute of Agriculture, Rome. *Annual Report* of the Department of Agriculture of Jamaica for the year ended December 31, 1927. *Die Stellung des Gartenbaues im Wirschaftsleben und im geltenden Recht*, by Walter Danhardt; Fachkammer fur Gartenbau in Dresden, Sidonienstrasse 11.

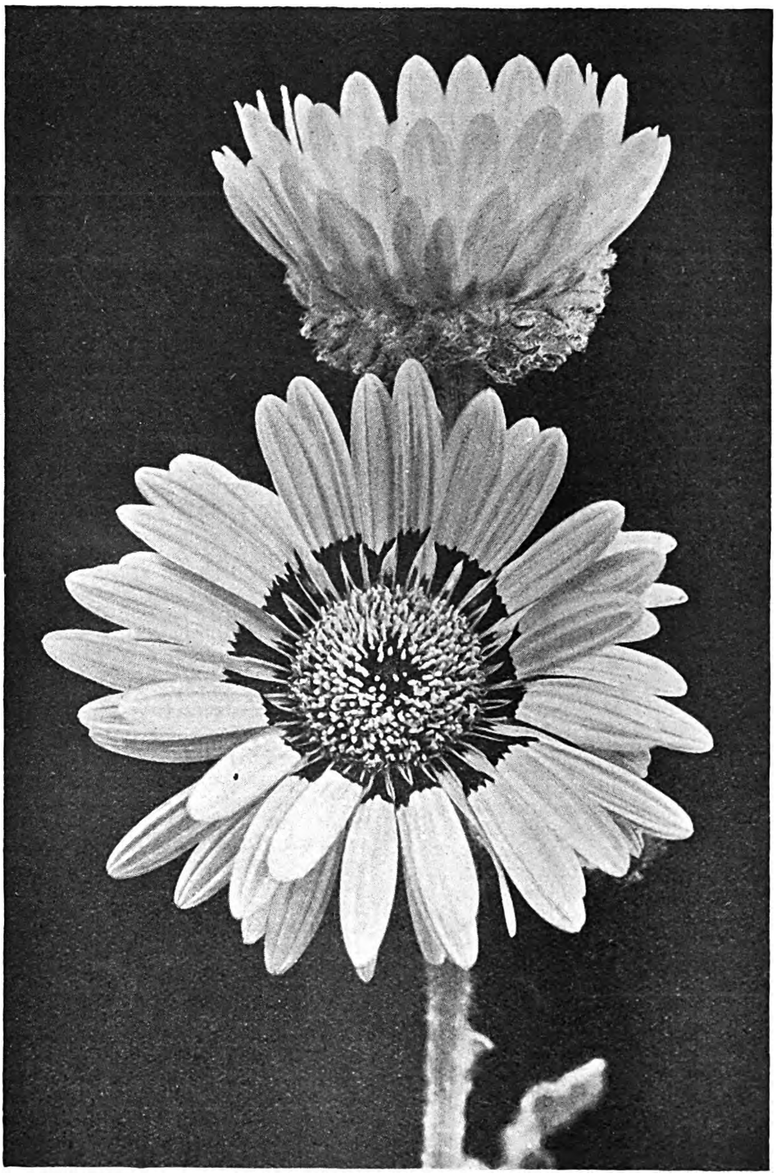


FIG. 209.—VENIDIUM FASTUOSUM.

R.H.S. Award of Merit, June 5. Flowers orange and crimson (see pp. 423, 430).

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN MOORE, Manchester.

Cirrhopetalums.—Members of this genus, with their quaint and charming flowers, are closely allied to the Bulbophyllums, and require similar cultural conditions. Many of the species require plenty of light to induce them to produce flowers freely after the growth is complete. C. pulchrum and its varieties, C. Thouarsii, the handsome C. Rothschildianum, C. longisepalum and the brightly-coloured C. miniatum should be grown at the warm end of the intermediate house suspended near the roof-glass. Thrips should be kept in check by occasional sprayings with an insecticide, and the small scales which attack these Orchids should be removed so soon as detected. If the plants are shaded when in flower the blooms remain perfect for a considerable time.

Cymbidiums.—Many species and hybrids of this genus have been making a remarkably fine display of flowers for some months past, and their lasting qualities are well known, but for the benefit of the plants the large flower spikes should not be retained too long. These Orchids grow well under cool treatment, and should not be shaded heavily, except just after root disturbance; ample ventilation is needed at all times and especially when the sun is at its height, while they are completing their growths, and also at night. Water at the roots should be given in sufficient quantities to soak the whole of the compost, allowing it to become fairly dry between each application, and red spider should be kept in check by syringing and spraying the undersides of the foliage frequently. Should this pest and the small scale insects gain a hold on the stems and leaves, sponging with a weak solution of insecticide is the best remedy. The plants are now making new growths and repotting should be done if necessary. Healthy seedlings and smaller plants require repotting annually, but specimens that have room for development and compost in good condition should not be disturbed, for large-growing Cymbidiums often flower better when root-bound. Where large plants are deteriorating they should be divided and the best portions potted; plants treated in this manner require extra shade from bright sunshine, and careful watering.

THE KITCHEN GARDEN.

By ALLAN FALCONER, Gardener to the Cheadle Royal Mental Hospital, Cheadle, Cheshire.

Parsley.—A sowing of Parsley, made during this month, should produce a valuable crop for next spring, as in very cold soils the August sown plants do not make sufficient roots to withstand the wet and cold winter, and are often disappointing, although in some districts August sowings are quite satisfactory. Ground which has been well cultivated and manured for a previous crop should be suitable, and the beds may be made four feet wide, with alleys between them. Sow the seeds thinly, and thin the seedlings to about eight inches apart; these operations may be performed without treading upon the beds, while if the alleys are dug during the winter they drain the excess moisture from the raised beds. The method adopted by some market growers, of sowing Lisbon Onions with Parsley, is very satisfactory, possibly the protection given by the Onions during the winter being the reason for the good results that are obtained; however, great care is needed when removing the Onions so as not to disturb the Parsley. Good varieties should always be sown, and among other uses, the foliage may be servicable when exhibiting vegetables. During the summer months the leaves should be cut systematically, removing all the outer growths, which may be dried for use during the winter. The beds which are cut over later in the summer should produce short, strong growths, which may withstand the frosts and snow. Seeds may also be sown now in skeleton frames, to produce supplies during the winter, when protection may be given.

Coleworts.—The Rosette and Hardy Green varieties should be sown now, and in some districts may be used to fill ground that has been cleared of early crops; they are useful for following summer Cabbage.

Broccoli and Cauliflower.—The April-sown plants now require attention and should be planted when ready. Undoubtedly the finest place to plant Broccoli is on an old Strawberry bed, first chopping up the Strawberry plants, burning the material used for covering, and spreading the resultant ash over the soil. Hoe the surface of the bed and make the holes with a crowbar to receive the plants, watering each hole as the work proceeds.

PLANTS UNDER GLASS.

By J. COUTTS, Assistant Curator, Royal Gardens, Kew.

Rochea coccinea.—This handsome plant, more generally known as Crassula, is an old greenhouse favourite, large specimens being very handsome when covered with the dark red and sweetly-scented flowers, while one-year-old plants are also very useful. Cuttings should be inserted singly in small pots at the present time, or three or four cuttings may be placed in one pot, potting them on intact as they require it. At this season of the year they root readily in the open, and the cutting pots may be stood in a shallow cold frame, so that they may be protected during wet weather. During the autumn and winter they may occupy a cool, airy greenhouse, a shelf close to the roof-glass being an excellent position for them; during the winter they should be kept rather dry at the roots. They grow freely in any good potting compost, which should, however, be thoroughly drained; old mortar rubble should be substituted for sand to ensure perfect drainage. The dwarf-growing hybrids and R. jasminea are possibly more useful for decorative purposes, and were at one time grown largely for market purposes. The same cultural treatment may be employed as advised for R. coccinea, although the cuttings are better inserted directly into five-inch pots, in which size they may be flowered; five or six cuttings may be placed in each pot. R. jasminea is, unfortunately, not at present in cultivation. All the Rocheas are subject to attacks of Begonia mite, which should be guarded against by using the sulphur vaporiser, or spraying with a nicotine compound.

Malmaison Carnations.—Although not so popular as they used to be, these are still grown in considerable quantities. As they pass out of flower they should be planted in cold frames and layered, selecting good, healthy plants for this purpose; if the growths are long and straggling it may facilitate the work of layering if the plants are laid on their sides. When the layering is completed, the frames should be kept close and shaded from bright sunlight until the cut surfaces commence to callus, when light and air may be afforded them gradually. When well-rooted, they should be lifted and potted into sixty or forty-eight-sized pots, according to their root-system and the strength of the plants, after which they may be stood in a cold frame or cool house and kept close for a few days until root action commences. The compost should consist of good mellow loam that has been stacked for twelve months, and unless the loam is very heavy the addition of leaf soil is not necessary; to ensure free drainage, old mortar rubble is preferable to sand, for lime is essential for the healthy growth of all Carnations. A dusting of soot and wood-ashes, and a six-inch potful of bone-meal, may be added to every bushel of soil. The plants should be potted moderately firmly, and watering should be done carefully. I do not advise the use of the syringe, for any excess of moisture on the foliage and in the atmosphere is certain to lead to an attack of rust; for this reason the foliage should be kept perfectly dry during the winter and only sufficient water afforded at the roots to prevent the plants from shrivelling.

HARDY FRUIT GARDEN.

By T. H. TOMALIN, Gardener to the EARL OF BESSBOROUGH, Stansted Park, Emsworth, Sussex.

Bush Fruits.—All side growths on young bushes of Red and White Currants, and Gooseberries, may now be shortened to four or five leaves, but those on the ends of the branches, and others required to furnish the bush, should be allowed to extend to their full length. This treatment encourages the development of fruiting spurs, and by admitting sunlight and air into the interior of the bushes, increases fruitfulness. Cordon-trained specimens of the above fruits should have their leading growths secured to the supports before they are in danger of being broken off, and all side-growths should be stopped at the fourth leaf.

Black Currants.—Aphis often attacks Black Currant bushes at this season, and if neglected does serious damage to both the growths and the fruits. Infested bushes should be sprayed on successive evenings with Quassia extract until the pest is eradicated, after which a forcible spraying with clear water should cleanse the bushes and fruits.

Strawberries.—For sending long distances by post or rail, the ripe fruits should be gathered in the early morning, but for jam, dryness is the main consideration, and to ensure this condition the afternoon is often the best time to pick them. The choicest dessert fruits are usually packed in single layers in shallow punnets, each fruit being wrapped separately in a leaf; for this purpose the young, soft leaves of the Lime tree are most suitable. The punnets are then packed in boxes of a suitable size to hold six or eight punnets, each surrounded by a layer of wood-wool. Packed in this manner the fruits travel safely for hundreds of miles, and arrive almost as fresh as when gathered—the writer has for years successfully used this method for sending dessert Strawberries from the south of Ireland to London. For ordinary purposes the punnets may be filled to capacity on the beds, and then fitted into the boxes. For commercial purposes, chip baskets, in various sizes, are usually employed. These may be lined and covered with soft paper, the covering paper being secured with a strand of raffia.

FRUITS UNDER GLASS.

By T. PATEMAN, Gardener to SIR CHARLES NALL-CAIN, Brocket Hall, Hertfordshire.

Cherries.—The house in which the Cherries are ripening their fruits should be kept dry and cool, for excessive soil or atmospheric dampness may cause the fruits to crack. Means should also be taken, by covering the ventilators with netting, to keep birds away from the fruits.

Outside Fruit Borders.—Although up to the present time outside fruit borders have not required much attention with regards to watering, should the weather remain hot it may become necessary. The borders should be top-dressed with short manure to a depth of three or four inches, and this should be followed by a heavy watering. Borders composed of heavy loam, unless afforded a mulching of manure, may crack badly on the surface, with the result that many fibrous roots are destroyed.

Figs.—So soon as the first crop of Figs is gathered in the early house, the foliage of the plants should be syringed vigorously to keep it clean, for on this treatment the success of the second crop will depend. If the trees have fruited well and are showing signs of a plentiful future supply, the trees should be fed liberally with liquid manure or an approved fertiliser, and the borders, which have been kept rather dry during the ripening period, should now receive a thorough watering; plentiful supplies of moisture will be required until the second crop of fruits commences to ripen. Any vigorous growths should be thinned sufficiently to allow the free access of light and air. The night temperature may be raised to 70°, without the aid of fire-heat, but a moist, stagnant atmosphere should be avoided.

THE FLOWER GARDEN.

By J. G. Weston, Gardener to the Duke of Devonshire, Chatsworth, Bakewell, Derbyshire.

Cannas.—In warm localities and in hot and dry soils, these are very prominent amongst the larger bedding plants, especially when they are afforded generous treatment. Cannas have been improved considerably, and the large-flowered hybrids are deservedly popular for planting out-of-doors during June. Whether massed in large beds by themselves, or grown in conjunction with other subjects, well-grown plants produce a very handsome effect, but the plants should be grown well. They require full exposure to the sun, and should be planted in a warm situation, in soil that has been trenched and well manured some time previously.

Propagating Spring Bedding Plants.—When these are removed from the flower beds these plants are usually laid-in closely in a shady border, in order to receive attention immediately the summer-bedding is completed. Propagation, either by cuttings or division, should then be commenced without delay, to secure strong specimens for planting permanently early in the autumn. If particular shades of Aubrietias are required it is best to propagate by cuttings or division rather than to depend on seedlings, for with these there is usually some diversity both in colour and habit. The double Arabis should be propagated by cuttings which, with those of Aubrietias, may be inserted fairly thickly in boxes of light sandy soil in a cold frame. Keep the frames close and shade the cuttings from the sun, but remove the shading late in the afternoon and earlier on dull days. During hot and dry weather the frame should be kept fairly close and damp, to prevent the cuttings from flagging; at night a little air may be admitted to allow the superfluous moisture to escape. When the cuttings are rooted, gradually increase the air supply, and as the young plants strengthen, withdraw the lights altogether. They should soon be ready to plant in the reserve garden, or better still, in their permanent positions if available, and require little attention.

Polyanthuses and Primroses.—If it is desired to increase any particular colour or strain these should be divided at once and planted in the reserve garden; those not considered good enough to retain for this purpose may be divided and planted in the wild garden, or by the sides of woodland walks. If planted in the reserve garden, the ground should have been well dug and manured, as these vigorous subjects repay generous treatment. If seedlings are preferred, seeds should have been sown early in the spring and the seedlings pricked out into boxes or cold frames. When large enough to handle, they may be planted in nursery beds.

FOR NORTHERN GARDENERS.

By A. T. Harrison, Gardener at Jordanhill Training Centre, Glasgow.

Tomatos.—The early Tomatos are now ripening their fruits, and where accommodation is limited, no harm is done to the plants by removing part of the foliage, so that the sun may reach and ripen the fruits. Later plants, now in six-inch pots, may still be planted in boxes or borders so soon as the houses are cleared of bedding plants. In the northern districts Tomatos are seldom grown in the open, but if given a well-sheltered sunny position against a south wall, they may, in favourable seasons, produce quite a good crop of fruits, although the chances are against them ever ripening. Many queries are received during the season regarding the yellowish blisters which form at the undersides of the fruits, and while no absolute reason may be given for this thickening and discoloration of the skin, it is found that it is most frequent in soils deficient in potash, and by giving the plants an additional supply in the form of sulphate of potash twice a week for a short period, the trouble gradually decreases. It should be applied at the rate of from one to two ounces per square yard, and watered in well, or a solution may be made by dissolving one ounce in one gallon of water and applied after the plants have been watered with clear water.

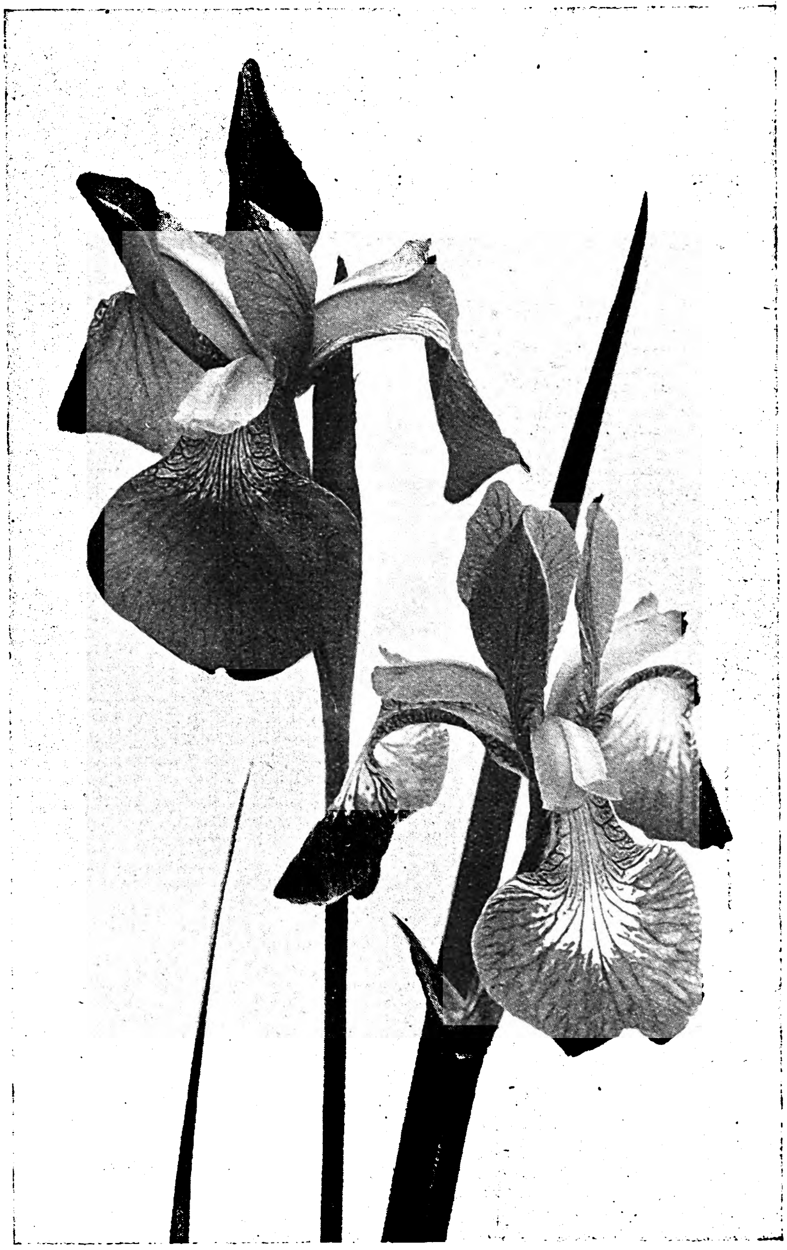


FIG. 210.—IRIS SIBIRICA VAR. CAESOR (LEFT) AND J. S. VAR. OTAWA.
R.H.S. Award of Merit to each, June 5. Flowers blue (see p. 423).

Asparagus.—The cutting of Asparagus should cease about the middle of June so as to allow the plants to mature in preparation for next season's crop; the growths made after that date should be supported carefully. If seeds were sown, the seeds should now be carefully weeded by hand and later thinned to twelve inches apart in the rows; by keeping the surface soil stirred, they should make good crowns during the first season.

Celery and Leeks.—The trenches having been prepared for the reception of these subjects well in advance, no time should now be lost in planting them, and every care should be taken to see that they do not lack moisture at the roots. Where an ample supply of manure has been placed in the bottom of the trenches the roots soon penetrate deeply into it, but for the maincrops of both Celery and Leeks much less manure is advisable, as the plants have to withstand the rigours of winter before their season of usefulness is over.

Thinning Hardy Fruits.—So far as one may gather from reports to hand, hardy fruits have set well, and in most districts there is the promise of heavy crops. It is advisable to go over the trees, especially the young ones, and remove a number of the fruits where they are crowded, and if this is not done in good time the chances are that the trees themselves will shed the fruits wholesale when the strain of seed-forming is upon them. Cordon and other trained trees on walls should have their crops reduced in good time, if necessary, and precautions taken, either by mulching or watering, to ensure that the trees do not suffer from lack of moisture at this critical period.

BULB GARDEN.

TRITELEIA UNIFLORA.

This delightful bulbous plant is not nearly so well known in gardens as it should be. Its beauty is unquestionable, although some do not care so much for the milk-white or blue-tinted flowers as they do for bulbs with brighter-coloured blooms, of which there is ample choice for April and May, its period of flowering. Yet it is very beautiful in low grass, in clumps in the border, or even in gravel.

The writer still remembers, after a lapse of many years, the delightful picture presented by hundreds of T. uniflora in the gravel in front of a fine old Edinburgh suburban house. Originally some bulbs had been planted in a narrow border there, and these had flowered and seeded and given rise to a vast increase. The seedlings sprang up and grew freely in the gravel of the drive, and made a wonderful picture of floral beauty, especially as they were most informal in their natural grouping. Here they were in close clumps; there, wider apart; and here and there vagrant seedlings had wandered from the main body, increased by offsets, and formed clumps of their own.

In a sunny situation it is very lovely. The leaves are lush and green, and the flowers, which are solitary on five- or six-inch stems, are large and of a lovely milky-white, bluer in the form violacea, and fragrant. Bulbs may be procured during early autumn and planted two inches deep. Although a native of the Argentine, Triteleia uniflora is quite hardy; it is sometimes listed as Milla uniflora. *S. Arnott.*

FLOWER GARDEN.

VENIDIUM FASTUOSUM.

This is one of the most beautiful and showy annuals yet introduced from South Africa, where it is much used in gardens as a summer bedding plant. It is by no means new to our gardens and appears to have been introduced to Europe in 1787 by the Austrian collectors Boos and Scholl, and first flowered in the Royal Gardens, Schoenbrum. The history of this showy plant is fully set out by Dr. Stapf in a recent issue of the *Bot. Mag.*, t. 9,127, and we are informed that, treated as a half-hardy annual, it offers no difficulty to the gardener, and with liberal treatment it grows to perfection.

Seeds of this species may now be purchased from some of the South African seed houses which supply seeds of native plants. Our plants came from two sources, and in both cases the senders said that no disappointment need be felt if the seeds took a year to germinate, as this often happened at home. Germination, however, was quite normal, and a large group of plants has arrived at the flowering stage without any trouble.

The plant is neat and attractive when grown cool; the flowers, often three to four inches across, are rich orange, carried singly on long stems. The foliage is soft, dull green and woolly, and more attractive in the young state than when fully developed.

Venidium fastuosum should make a fine plant for summer bedding if well hardened off before planting out. It is rather sparsely provided with foliage, and would require thick planting to be effective; little, however, may be said as to its merits as a subject for the flower garden, but as a greenhouse or conservatory plant it has attractions much greater than that of many plants to be found there. *T. Hay.*

PERPETUAL-FLOWERING CARNATIONS OUTDOORS.

The worth of these subjects for summer bedding is becoming more widely recognised. There are, however, still many gardeners who have not tried them, and to such, these few notes may appeal. Well-grown plants make a show of blooms from June until checked by the autumn cold. Several varieties are suitable for the purpose and among them the following deserve special mention :—May Day, Britannia, Rose Pink, Enchantress, Triumph, White Perfection and Baroness de Brienen. The stronger the plants the greater the promise for a bright display.

Planting out may be done from the end of May, and even earlier in many localities. Before planting, dig the ground deeply and apply a sprinkling of bone-meal. Do not spoil the ultimate appearance of the beds for the sake of one or two extra plants. A skimpy effect is never pleasing. A slight pricking of the ball of soil before planting is desirable as this will enable the roots to take hold of the new soil quickly. Firm planting should be practised and staking and tying done at the same time. The more flowering shoots the plants possess at the time of planting and the more advanced stage they are in, the sooner will the wished-for result be obtained.

As the season moves forward keep the shoots tied regularly and remove dead flowers as they appear. A little disbudding may be necessary, but not to the same extent as with plants growing under glass. An occasional hoeing of the bed will be an advantage, and there must be no lack of water should the summer prove very dry. *C. Turner.*

HARDY FLOWER BORDER.

PODOPHYLLUM EMODI.

This striking Himalayan plant is a useful and handsome herbaceous subject for a moist border or well-drained waterside. In the latter part of April it produces large, round, umbrella-like leaves whose margins are so cut into deep, triangular lobes that they have a tattered appearance. The pale green of this foliage is marbled and blotched with ruddy brown, and before the leaves are fully expanded the flowers appear. These bear a superficial resemblance to those of a Paeony, and in colour they are a fresh rose-pink, changing to white. Throughout the season the stately foliage has a decorative value of no small account and then, towards autumn, the fruits develop into the size and colour of a Victoria Plum, large and ripe, and remain on the plants for some weeks if not devoured by birds.

P. Emodi varies considerably in height, ranging from nine to eighteen inches, but P. Emodi majus grows at least a foot taller and is in every way superior to the type as a garden subject where space is not a consideration. This curious and distinctly attractive plant is quite hardy, and it does not spread unduly, remaining for years in a self-contained clump. Propagation may be carried out either by division or seeds. *A. T. J.*

DORONICUM CAUCASICUM.

It is hardly possible to claim that most of the Doronicums, or Leopard's Banes, are first-class border flowers, but most of them have some warrant for consideration where a large number of plants are required, while some of the dwarfer species are good spring-flowering subjects, although the taller D. plantagineum excelsum is probably the finest of the race for the garden.

The early-flowering period of D. caucasicum, and its dwarf habit, justify its place in the flower border, especially if the plants are not allowed to grow too large and are favoured with a good, rich soil. It it is allowed to grow into large clumps it is not so floriferous as when divided every two or three years into specimens of moderate size.

This species is, I consider, a better plant than D. austriacum. It has daintily notched or toothed, light green leaves, and well above these are produced the large, single, finely petalled flowers of bright yellow. Some critics say that these are too like those of the Dandelion, but, whether we agree to this or not, good clumps well furnished with golden blooms, brighten up the border early in the year. Its height varies considerably according to the soil and season; I have had it six inches and even ten inches high. *S. Arnott.*

POTERIUM OBTUSUM.

I have grown this charming subject for several seasons, and am now quite enamoured of it, for it is ideal for providing a bright display of colour in the herbaceous border during July and onwards. It is a native of Japan and is an introduction of comparatively recent years, but it has become popular with great rapidity and is fairly widely cultivated, while the majority of the nurserymen who deal in herbaceous plants offer it for sale.

P. obtusum is vigorous in growth and, with me, quite hardy, although it does not ripen seeds, but I do not know whether this is typical of it in this country; however, it responds to division and may be increased by this method. It forms a bushy plant with large, handsome foliage, and flourishes in ordinary, well conditioned soil, while the branched flower stems rise to a height of about three feet, and bear numerous spikes of rosy-crimson flowers; these are small individually, the long, slender, coloured stamens being the chief source of attraction. *M. W.*

TREES AND SHRUBS.

SPARTIUM JUNCEUM.

As this desirable shrub was introduced over three hundred years ago, it should by now be of fairly common occurrence in English gardens. Spartium junceum is, I suppose, known to most gardeners, differing as it does from all other Brooms in the round and perfectly smooth, dark green stems, which bear few leaves, but make up for this discrepancy by an abundance of blossom during the summer months, and occasionally producing a second display in the autumn.

Seeds are freely produced in this country and germinate readily if sown in sandy soil in a warm frame or greenhouse. Bottom-heat is not essential for the germination of this plant, but hastens the process and renders it less erratic. I have found that fresh seeds produce the best results.

S. junceum does not relish rich soil, and the ground requires little preparation, as the firmer it is, the more likely are the plants to remain upright in the soil. Naturally, it resents future disturbance of the roots, and therefore the site should be chosen with care; preferably one having a leafy background, so that the lovely, large, pure gold flowers are seen to advantage. It attains a height of ten feet or more, but is apt to become "leggy" in its old age. This suggests that a good effect is obtained from a large bed filled with the plant rather than from isolated specimens. It certainly gives a very fine effect when planted in uneven clumps or drifts in an open position, on some wild, barren slope facing south and viewed from a distance. To obviate the straggly appearance of individual specimens the unwanted branches may be removed in spring, but this "shaping" of the bushes should really be done regularly from their early stages.

The subject of this note is a native of the rocky shores of the central and western Mediterranean countries, although I believe a very fragrant form or species, known as S. acutifolium, was introduced later from Turkey. The only other variety known to the writer is a double-flowered form, which is occasionally to be seen in gardens. *L. B. C.*

PENTSTEMON MENZIESII VAR. SCOULERI.

Although this is a variety of P. Menziesii, in commerce and in gardens generally it is more commonly known merely as P. Scouleri. It is a magnificent subject, in fact, probably the finest of the shrubby Pentstemons, and is most suitable for growing on the rock garden where it should be afforded a sunny position, preferably on a ledge where there is a deep root-run of good loamy soil.

P. M. Scouleri forms a rather loose, but bushy plant up to about two feet in height, its growths being clothed with greyish-green, rather fleshy and toothed leaves, and terminated with clusters of handsome, tubular flowers, large and swollen, and rosy-lilac or rich violet-purple in colour, which are produced in masses early in the summer.

It is a free-growing subject, soon forming a well-flowered bushy plant, and may be raised either from seeds or cuttings. Seeds are often produced in quantity, but the seedlings vary somewhat in the colouring of the flowers; cuttings of soft growths root quickly in sand in a cold frame during the summer, and if potted into small pots and wintered in a cold frame, make fine, bushy little plants for putting out during the following spring. *W.*

ALPINE GARDEN.

CAMPANULA LAURII.

ONE of the first of the dwarfer Campanulas to bloom with me this year has been the charming C. Laurii, a plant of recent introduction, which has not yet found its way into general cultivation. Up to the present it is not widely offered by the trade, but its worth is such that it is sure to come well to the front in a short time, even although it has so many congeners of dwarf habit and great beauty. It is about six inches high with me, and forms a little tuft of small foliage, surmounted by large flowers of a delightful shade of lavender, which are held upright instead of drooping, and are so freely borne that a good plant almost covers its foliage with the charming, star-like flowers.

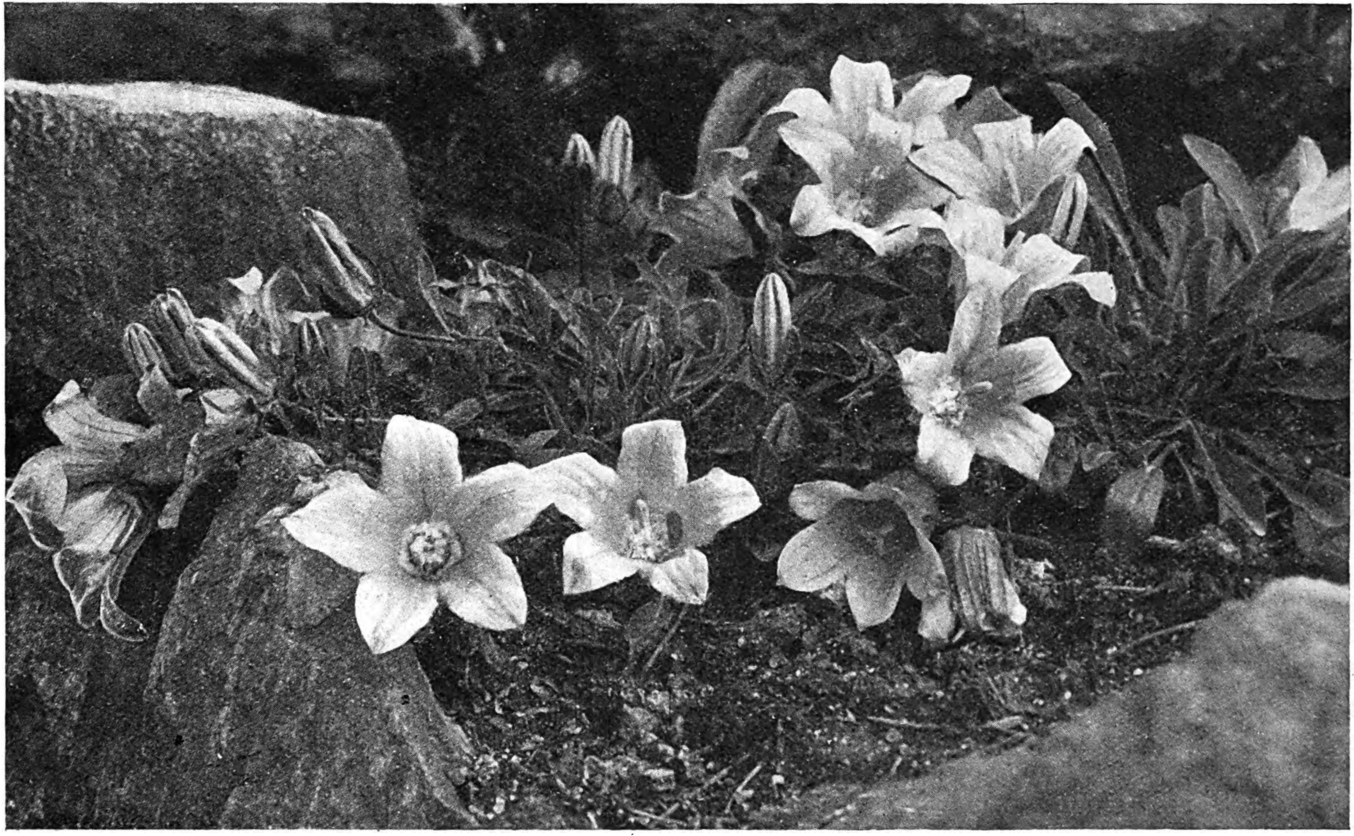


FIG. 211.—CAMPANULA AUCHERI.

All the information I have regarding the origin of this Campanula is that it came to us from the Greek Islands, rather a vague indication of its native habitats. It is said to be perfectly hardy, and its behaviour here is so satisfactory that I have little or no fear of its ability to withstand our winters with impunity. It was quite a small plant when it came to me last summer, but it has withstood one of the most trying winters we have experienced and has increased in size. It is growing on a ledge in the rock garden, about four feet above the level of the path, and in a position well exposed to the sun and wind. I observe that seeds of C. Laurii were offered this spring. A light soil, well-drained, should meet its requirements. *S. A.*

POLYGONUM VACCINIFOLIUM.

FOR autumn effect on the rock garden, few plants are more useful than this beautiful Knotweed, that escapes the usual coarseness of growth associated with the race and is a subject of extreme beauty and grace of habit.

Polygonum vaccinifolium (see Fig. 212) is a trailing plant that will clothe the rocks over which it is allowed to hang with dense mats of long, slender, woody growths, well-furnished with small, glossy, evergreen leaves of a fresh and vivid appearance. The mats are, in autumn, transformed into sheets of soft rose-pink by the innumerable spikes, two to three inches in height, of closely packed, small flowers.

This subject delights in a warm, but not too sunny position and ordinary loamy soil; it is increased easily by cuttings during the summer months, and when once established is absolutely hardy, but it is advisable to winter young freshly-rooted plants under cover, for they are liable to damage if the weather proves too severe. *F.*

CAMPANULA AUCHERI.

THIS choice Bell-flower is desirable for the moraine or pleasant places in the rock garden. It is a native of the region extending from the eastern Caucasus to North Persia, and although common in that region is not very frequently met with in cultivation. The leaves and flowers are downy, and the latter are of violet-purple colour and of large size considering the habit of the plant (Fig. 211). Mr. Reginald Farrer wrote of it in high praise, and stated in *The English Rock Garden* that "C. Aucheri restores us to the charms of C. alpestris and C. ardonensis. C. Aucheri can always be known from all forms of C. tridentata and C. Saxifraga by the outside of the great violet bell, which is downy instead of being waxy-smooth; also, its foliage is scalloped all the way round the edge. The same downiness of the flower distinguishes it from the bald-belled C. bellidifolia in its smaller forms. C. Aucheri has the utmost neatness and beauty."

PELARGONIUM ENDLICHERIANUM.

IT is very seldom that this, the only Pelargonium that can lay any claim to hardiness in this country, is seen in gardens, and its rareness is easily accounted for, as although in the warmest of situations on the rock garden it may survive the winter, it is rare that it is so fortunate. Moreover, it is difficult to obtain in this country and is not often offered for sale, but it may sometimes be secured from the Continent.

P. Endlicherianum requires a sunny and sheltered nook, and well-drained soil of a light loamy nature. It forms a bushy plant, with scented reniform leaves of soft texture, and during late summer the large, rose-carmine flowers are produced in successional clusters of four or five blooms over a prolonged period.

PARRYA MENZIESII.

AT one time this subject was quite a common occupant of rock gardens, but its popularity seems to have waned, and now it is not so often seen. It comes from north-west America and is quite common on the Rockies; it is easy to grow and raise from seeds, which are usually produced as freely as those of the Wallflower and Erysimum, to which family it belongs.

P. Menziesii is of dwarf, tufted habit, forming rosettes of greyish-green, narrow leaves on rather short, woody stems, and is at the present time bearing numerous spikes about six inches high, of rosy-purple flowers. This subject thrives in a sunny situation and ordinary soil of not too rich a character, while cuttings form a supplementary method of increasing it. *Kent.*

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ON THE USE OF LIME.

THE regular use of lime is a precept well-known to cultivators of the soil, whether their interests be in farming proper, in growing crops under glass, or in the care of allotments and gardens. It is, however, a fact that the use of lime is a principle which is frequently not practised at all, even by those who are well aware of its importance. It is also unfortunately true that, in many cases, lime is used indiscriminately, sometimes when not required, and more often in quite unsuitable forms.

It may, perhaps, be advisable at the outset to define the uses of lime in the soil. Although there are several minor functions which lime may be called upon to fulfil, there are two main purposes for which it should be applied, and these must be clearly distinguished in order to avoid an unprofitable application. The effect of lime may be mechanical or chemical.

THE MECHANICAL EFFECT OF LIME.

A soil which tends to be heavy, will, in the absence of lime, have its "sticky" properties accentuated, especially if not well supplied with organic matter. The regular use of lime on such a soil should make it easier to work, and the clods will crumble much more easily, whilst the preparation of a seed-bed in the spring, and the maintenance of a fine texture on the surface during the summer will be greatly facilitated. There are many heavy soils, however, which are somewhat difficult to work, although quite well supplied with lime. In such cases, the full influence of the lime has already been exerted, and applications of further quantities will have no good effect in improving the texture.

THE CHEMICAL EFFECT OF LIME.

The second important function of lime in the soil is to prevent the development of acidity or sourness. It should not be thought that only over-manured soils tend to become sour. All soils have this tendency, even if not cropped at all, but the rate at which sourness develops is increased if the soil is light, and if manures (either dung or certain artificials) are being applied every year. In such cases it frequently happens that lime must be applied regularly every few years to replace the large quantities lost by chemical action and by drainage. Soils which are acid cannot yield maximum crops; there are some crops, however, which are more tolerant of sour conditions than others. Potatos, for example, succeed in a soil which is too acid to grow good crops of Turnips, Peas or Beans.

Sourness in some cases may be apparent from simple observations. The presence of certain plants, such as Bracken, Sorrel and Spurrey in the neighbourhood is an almost certain sign of acid conditions. Plants on sour soils frequently do well to begin with and then fail badly later in the season, especially if rough conditions prevail. This effect is shown very well on acid tennis lawns where, after a spell of dry weather in July or August, the main part of the court may be quite brown, whereas the grass where the lines have been marked, which has thereby received regular dressings of chalk, appears bright green. Disappointing results from the use of manures is another common experience on sour soils.

TESTS FOR LIME.

But more information than this is needed. It is desirable before deciding to attempt to improve the "workability," *i.e.*, physical condition, of a soil by liming to ascertain if there is an ample reserve already present. The following simple test may prove of value for this purpose. Obtain a small quantity of hydrochloric acid, *i.e.*, muriatic acid or spirits of salt, from a chemist or an oil shop. Dilute about a tablespoonful of this with about five tablespoonsful of water in an old jug or cup. Do not actually measure the acid in a metal spoon, and do not use a metal container for the diluted mixture. Then place some of the soil to be tested in a saucer, and pour a small quantity of the diluted acid on to the soil. A reserve of chalk in the soil is indicated by effervescence, or "fizzing," and if the bubbles come off freely, producing definite frothing, it is safe to assume that the texture of the soil will not be improved by liming, and also that the soil is not likely to become sour, at any rate for many years. If, however, there is very little or no reserve of chalk in the soil, the following test may be employed to determine whether or not there is any lime required. Obtain from a chemist, at the cost of about 1s., an eight-ounce bottle of five per cent. aqueous salicylate of soda. Then select a small bottle of colourless glass of about two ounces capacity; clean it well and remove any labels. Place into this small bottle about two teaspoonfuls of the soil to be tested, and add about twice this quantity of the solution. Shake well for several minutes, then allow to stand for about half-an-hour until the soil settles leaving the liquid clear. Notice the colour of the liquid standing over the soil. If there is any pink or red tint in the liquid the soil is "sour," and lime is required, but if the liquid is colourless or only a brownish "muddy" colour, no lime is required.

These two tests may be carried out quite well by any grower in his own home, but if more detailed information is needed about a soil, or if a guide as to the quantities of lime it would be profitable to apply are required, a sample should be sent to the local County Horticultural or Agricultural Organiser, who will arrange for the necessary tests to be made at the analytical centre, which is usually the agricultural college situated in that area. The sample of soil should be taken from at least six places in the area to be tested, and should represent the soil to a depth of nine inches. If a spade is used it should be driven in vertically so as to obtain a sample which does not contain an undue proportion of the top few inches. About 4 lbs. of the soil is a sufficient quantity to forward for analysis.

VARIOUS FORMS OF LIME.

Having decided whether a soil will benefit by liming, the next problem which confronts the grower concerns the form of lime to apply, and here the comparative merits of lime, chalk and other similar substances come under review. The various materials which may be used can be classified as follows:—

(*a*) Substances in which quick lime is the predominant ingredient, *e.g.*, lump lime, shell lime, and ground lime.

(*b*) Forms of slaked lime or hydrated lime.

(*c*) Ground chalk or ground limestone.

(*d*) Precipitated chalk.

(*e*) Refuse limes.

All these substances have to be dissolved in the soil water before they can fulfil their function and in this connection it is worthy of consideration that lime or chalk should be spread on the surface and allowed to wash into the soil, or at most should be only lightly forked in. Owing to the fact that lime at lower levels does not work its way upwards, digging it in may only result in bringing up to the surface a sour layer of soil which never benefits from the application.

When once the material has dissolved in the rain and soil water, its effect is the same, whether it was applied in the form of lime or chalk, so that the main consideration in deciding between the various substances is the rate at which they dissolve.

Lime in the form of quick lime, *i.e.*, burnt lime, lump lime, shell lime or ground lime, is comparatively soluble in water, and soon becomes distributed throughout the soil water system. Excess over and above that quantity neutralised in, or absorbed by, the soil, very quickly becomes fixed in the soil in the form of chalk in a very fine state of division, in which form it acts as a ready reserve for subsequent needs.

It is fairly well known that quick lime, slaked lime and chalk are equivalent chemically to one another in the proportions of 56 lbs., 74 lbs. and 100 lbs. When these figures are applied to the use of commercial articles, however, it should be remembered that none of the substances ever reach one hundred per cent. purity, and many often fall far below this figure. Samples of lime as sold, frequently contain less than forty per cent. of burnt lime; the remainder of the material consists of unburnt chalk and impurities.

LUMP LIME.

As a rule, lump lime is the purest form of lime to buy, but samples of this are often very incompletely burnt. A sample may contain for instance, fifty per cent. of free lime (partially slaked), forty per cent. of chalk, and ten per cent. of impurities. Such a sample would theoretically be worth only slightly more than a good sample of ground chalk, and, in fact, would probably be worth much less since the unburnt chalk would not be in a finely ground condition. Good samples of ilme should contain at least seventy-five per cent. of quick lime. The disadvantage of using lump or shell-lime is that it has to be slaked before spreading on the soil. It should be borne in mind that only the very best quality lime will slake in a really satisfactory manner. The heaps should be exposed to the rain, or preferably wetted artificially (1 cwt. of lime requires 3½ gallons of water), and the lumps should swell up and crumble to a very fine powder almost immediately, leaving no lumps at all. This powder may then be spread evenly over the ground.

GROUND LIME.

Ground lime is apt to pick up moisture during grinding by air-slaking, and the ground product is much more liable to deterioration in quality during transport and storage than is lump lime. Ground lime, moreover, is frequently quoted at lower prices than lump lime, and in such cases the former probably contains more ashes and other impurities. The advantage of using lime already ground is that it may be distributed direct from the bags on to the ground.

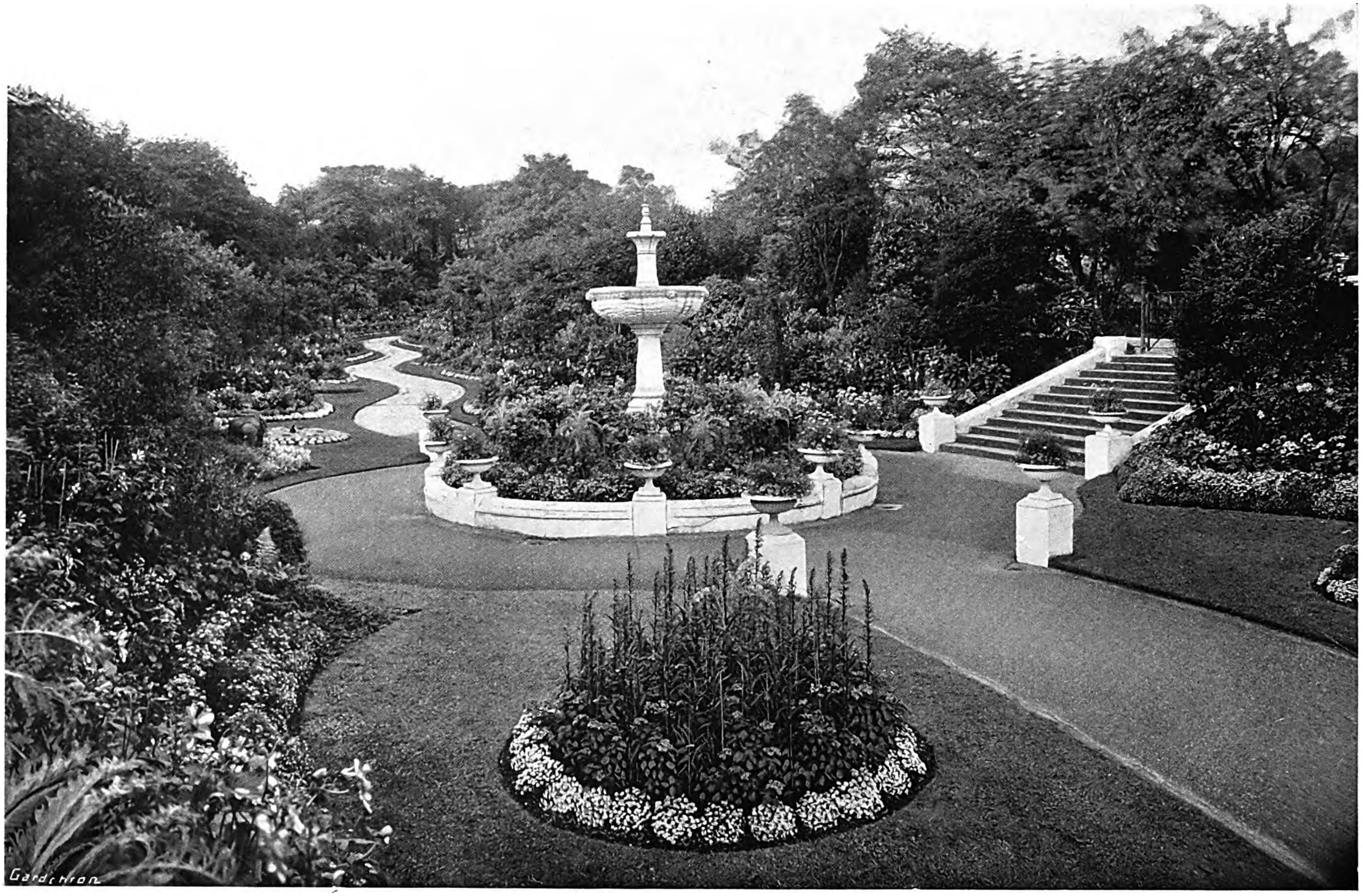
HYDRATED LIME.

Probably the most satisfactory form in which to handle lime is as slaked lime or hydrated lime. This may be obtained as a very fine powder, which does not scorch foliage to the same extent as does ground quick lime, and which does not deteriorate on keeping to the same extent as quick lime, and which in addition affords none of the trouble during storage occasioned by bursting bags and steaming heaps of lime. The best grades are rather expensive, but some firms produce a suitable product at a quotation just under the current price of burnt lime.

Quick lime, or slaked lime, should not be mixed with or applied to the soil within several weeks of an application of sulphate of ammonia, muriate of ammonia, or dung, since losses of valuable fertilising ingredients occur. Lime also must not be mixed with superphosphate or dissolved bones before application to the soil.

GROUND CHALK AND LIMESTONE.

Calcium carbonate, of which these materials consist, is much less soluble than lime, and since the smaller the size of each particle the quicker the substance dissolves, it is apparent that fineness of division is an essential feature in order that the low solubility may be counteracted. Some time is required for any fragments larger than those in the powdered state to become dissolved in rain water, a fact recently commented on by a correspondent in this journal. These substances, unless in a very fine powder, are practically valueless. In recent years, a great advance has been made in the process of grinding, and finely ground products



LOCKE PARK, BARNSLEY.

are now obtainable. The benefits derived from such samples should compare favourably in most cases with those derived from good lime, provided that about twice the quantity be applied. Samples should contain from ninety-five to ninety-eight per cent. of calcium carbonate.

Precipitated Chalk.

During certain industrial processes calcium carbonate is formed as a result of chemical action and is thrown out of solution in the form of exceedingly small particles. The size of these particles is much smaller than may be obtained by any process of grinding down the rock material, so that materials of this nature sold for agricultural purposes are the most satisfactory forms of chalk to use. These substances are usually very pure and should contain ninety-seven or ninety-eight per cent. of calcium carbonate. The particles of chalk are similar to those left in the soil following the application of quick or slaked lime, but it should be remembered that if the particles are actually precipitated from solution in the soil they will be much better distributed than if they are added as a powder and merely forked in. Both forms of powdered chalk are convenient to handle.

Refuse Limes.

In some districts there are opportunities to obtain waste limes from factories. These should be used with great care, since they may contain impurities which would be harmful in the soil, but many suitable refuse limes are available from water-works, sugar factories and similar places at very low prices, and growers in such districts would be well advised to avail themselves of the opportunity of obtaining a valuable soil improver at reduced cost. It is essential that these materials should be finely ground and in a condition suitable to handle.

The whole question of the comparative merits of lime and chalk depends initially on the quality of products obtainable in any district. This quality can only be determined by analysis, but purchasers will have a better indication of purity when the new Fertilisers and Feeding Stuffs Act (1926) comes into force on July 1 of this year. Under these revised schedules, lime and chalk are required, for the first time, to be sold under a guarantee of purity, and it should then be much easier to judge whether local supplies of chalk or lime are worth buying, or whether it would be more profitable to buy lime from further afield.

To summarise, it would appear:

(a) That quick lime or slaked lime, if of good quality, will give the best results.

(b) That slaked lime is more convenient to handle than quick lime, but is often more expensive, especially since half as much again as quick lime must be purchased and carried on rail and from the station, to give equivalent results.

(c) That chalk, if very finely ground and particularly if chemically precipitated, will give almost as good results as half the quantity of quick lime, but if the distance that the double quantity has to be brought is great, the extra cost of carriage will weigh the balance in favour of lime.

Good quality chalk at a reasonable price, delivered, will at all times be better than poor quality lime. *F. L. S.*

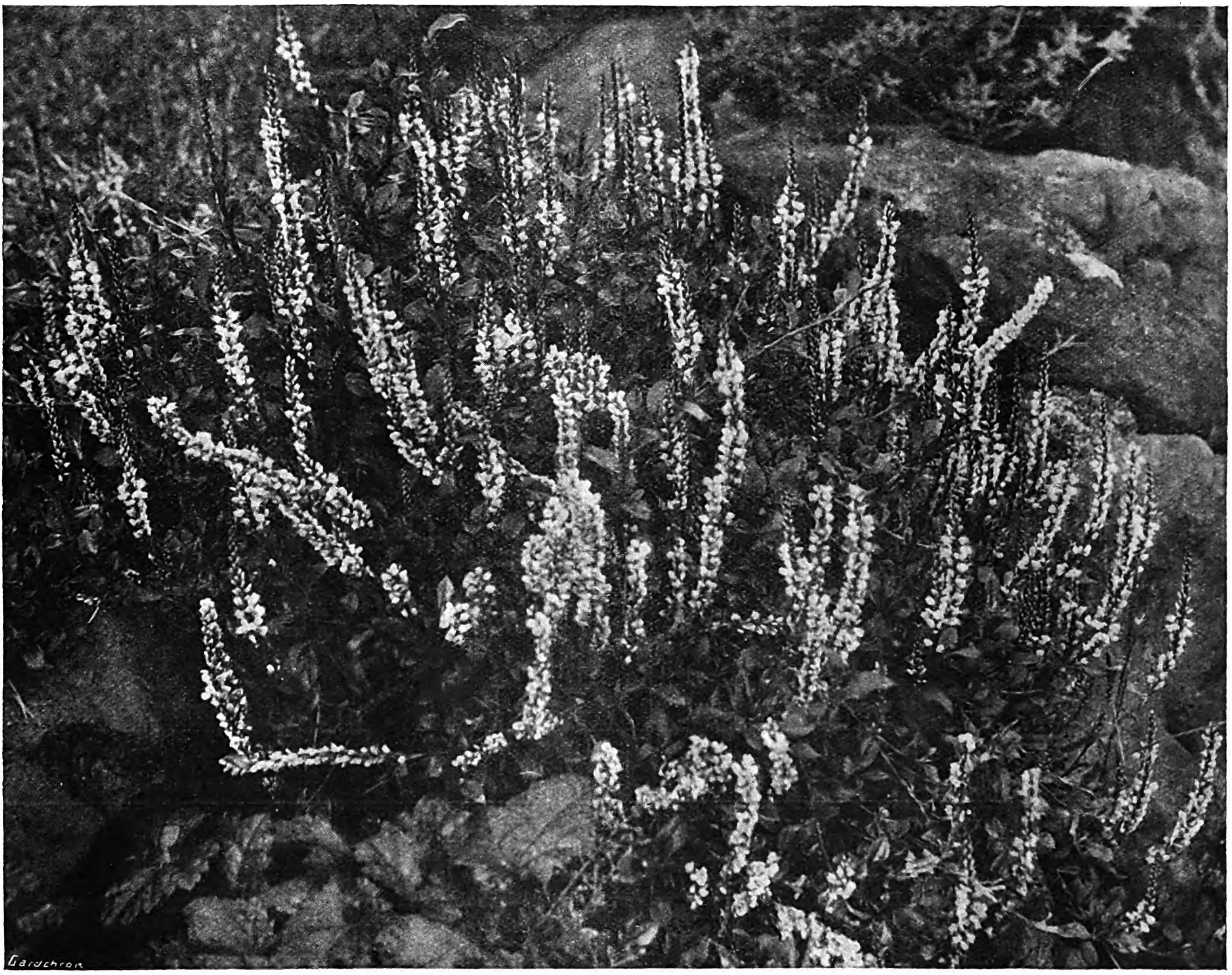


FIG. 212.—POLYGONUM VACCINIFOLIUM.
(see p 431).

THE ROCK GARDEN, CRICHTON ROYAL, DUMFRIES.

Among the mental institutions in the British Isles, the Crichton Royal stands in the front rank. Originally liberally endowed by a local benefactor, it has greatly expanded into a magnificent institution through the wise fore-sight and control of its directors and the able administration of a succession of medical superintendents of the highest ability. From time to time additional land has been acquired and new buildings erected. This has tended more and more to make the institution a home for the paying patients, many of whom have been, and are of high social standing. The buildings are excellently planned and furnished, and even the most fastidious cannot fail to recognise the thoroughness with which everything has been planned and arranged. The large extent of the estate, which is beautifully situated near Dumfries, and overlooking the valley of the Nith and the Solway Firth, permits of ample space for the buildings and ornamental grounds and the extensive farming operations which supply the institution with dairy and other produce. Under the able management of Mr. George Will, the Crichton Royal Farm has acquired a high reputation.

All these matters are beyond the scope of this article, but are cited as helping in some degree to represent the character of this magnificent institution, which is now under the charge of Dr. C. E. Easterbrook.

As may be readily understood, the horticultural departments of Crichton Royal are in every way as well equipped as others, and minister largely to the success of the work of the institution. The activities of this department are too great to be fully discussed in these notes, but it will be clear to everyone that Mr. E. Joss, the very able gardener, has no light task, and the admirable way in which he has fulfilled his duties during the sixteen years he has held this appointment, is sufficient to satisfy even the most critical. The indoor department is very extensive, and a new range of greenhouses, erected a few years ago by Messrs. Mackenzie and Moncur has aided the production of vast numbers of table plants, cut flowers and fruits required for the establishment.

The pleasure grounds are very extensive, and border and other flowers, shrubs and trees, so well as the cricket and other grounds set apart for sports, are in perfect order.

The rock garden, which was the main object of the writer's visit at this time, is of great extent. It owes its inception to the advocacy of that eminent botanist, Sir George Watt, one of the Directors, who, during his term of office, devoted much time and thought to its planning. Its construction was carried out under the personal supervision of Mr. Joss, who deserves great credit for its success. Skilful advantage has been taken of the natural lie of the position, which is a sloping bank facing almost south-west; and the rockwork has been excellently laid to conform so far as possible, and to harmonise with the natural strata of the rocks of which it is formed. These are great blocks of the old red sandstone which have been quarried on the estate, and which is the general local stone of the district. It harmonises well also with the buildings and the position, and shows up the colours of the plants when in flower, and which appear to revel in this medium.

As is proper with a rock garden of this size, the plants are grown in large masses, and their condition and freedom of flowering reflect much credit upon Mr. Joss and his able lieutenant, Mr. M'Donald, who has been in charge of the rock garden since it was constructed about three years ago. The general effect of the rock garden is most pleasing, for the masses of foliage and flowers and the boldness of the stonework, combined with its great extent, render a general view highly impressive. Skilful use has been made of the natural slope in the placing of the rocks, and a delightful feature is made by the provision of flights of rocky steps, leading from one terrace to another, and draped with such subjects as Arenaria montana and A. balearica, and with Thymus Serpyllum lanuginosus. A streamlet flows through part of the garden and supplies a small pond, fringed with Irises and other moisture-loving plants, and the boggy stretches for the moisture-loving Primulas—a great feature of the place.

On entering the garden one is impressed by the bold and generous planting as represented by the great masses and drifts which cover the rocks in a most fascinating way. Its extent admits of the employment of many shrubs and other plants which would be out of place in a smaller one, but which are delightful here. For example, near the top of the bank is a fine group of the noble Eryngium pandanifolium, a plant rarely seen in this district, although it is quite hardy at Crichton Royal. Senecio Greyi and S. laxiflora are very fine, as also are the New Zealand Veronicas, including, among numerous others, a grand plant of V. Hulkeana. Deutzias, such as D. gracilis var. carminea, are superb; Azara microphylla is fine; and various Cotoneasters, especially a grand mass of C. horizontalis, drape the rocks. Azalea ledifolia is delightful, and many other flowering shrubs, such as the Cistuses, are in perfect condition. A great feature of this rock garden is created by the masses of numerous Helianthemums, some in flower and others in bud, and the former glowing with colour in the sun. A large mass of Othonnopsis cheirifolia, now not much seen, is most effective with its glaucous leaves and orange-yellow blooms.

Hanging over the brow of a rock, a drift of Lithospermum intermedium is lovely with its purple-blue flowers, and at the base of a rock the graceful Linum alpinum waves its blue flowers, on slender stems, in the soft breezes. Spires and carpets of beauty are given by the Saxifrages of the various sections, and a good plant of S. longifolia was observed in a chink in the rockwork. The ever-popular Dianthuses are plentiful, and Campanulas of the choicest species abound. The glorious Gentians do well, and it was a pleasure to see a fine group of the tall G. lutea in flower. Androsaces are represented by A. sarmentosa var. Watkinsii, A. villosa and others; and hardy Geraniums, Erigerons and Erodiums give masses of colour. Aster Farreri is happy, so is Potentilla Farreri, and Dracocephalum Forrestii apparently likes the conditions here. A shaded corner shielded from the sun affords an ideal place for Ramondias and, in addition to the type, the rarer white and pink varieties of R. pyrenaica are in superb condition, while in sunny nooks several Aethionemas, such as A. Warley Hybrid and others, are happy in their situation and surroundings.

A host of other plants call for notice, but considerations of space prevents further details of these. An exception may be made of the Primulas, with two of the allied Dodecatheons; also Meconopsis sinuata latifolia and M. brevistylis, which are cultivated in one of the colonies of Primulas in a moist spot. The Dodecatheons are but little cultivated in the district, and it was a pleasure to see D. Meadia and D. Jeffreyi flourishing and giving a wealth of their Cyclamen-like flowers among the Primulas. The Primulas are worth going to this rock garden to see, and the moisture-lovers are a sight in themselves.

It is, for example, a delight to see the many plants of P. burmanica, varying in shade of colour from seeds, but in superb condition. Mr. M'Donald has secured a good hybrid of P. burmanica and P. Bulleyana, that is intermediate in colour. Masses of P. Red Hugh, P. pulverulenta, P. Beesiana, P. Bulleyana, P. japonica, P. secundiflora and several others thrive happily, while P. sikkimensis sows itself here and there, and the seedlings, flowering as they do in no regular order, add charm to an already beautiful picture.

Such are some of the features of this magnificent rock garden which the writer has seen rise from a grassy bank to a bare rock garden, and now to a happy home for a host of lovely plants that give delight and comfort to many. *S. Arnott.*

BANANA CULTIVATION IN JAMAICA.

Although the Banana is one of the oldest of domesticated plants, it is only during comparatively recent times that it has been cultivated on commercial lines. To growers in Jamaica belongs the credit of being the pioneers of the industry, and they have proved that improved and intensive methods of cultivation pay handsomely, for although Bananas are grown extensively in many other tropical countries, few have adopted the intensive methods common in Jamaica, where the production per acre is foremost.

In Jamaica good crops may be obtained for home consumption by simply leaving the plants to grow and fruit at will, without regard to the principles of cultivation, thus proving that the climate is eminently suitable, especially in the lower altitudes. To the commercial grower, however, this is not sufficient, for he has to consider continuity of supply and the timing of his plants to produce their heaviest crop to meet the best market.

In the matter of soils, too, Jamaica is highly favoured, for there are large areas of land where Bananas may be grown successfully. Chief amongst these areas are the natural Banana soils, which are clays composed of disintegrated sandstone rocks, containing and holding for lengthened periods a large proportion of humus. These soils produce excellent crops for a number of years with very little attention, provided the drainage is good and ordinary cultural methods are practised. Clays of the old limestone formation, which are of a much finer texture, having an upper strata of rich, black deposit, and an underlying one of dense clay, are also highly fertile, and may be classed as true Banana soils. There are vast areas of this type of soil in the upland centres of the island where Bananas may be grown continually, if due attention is paid to manuring and mulching.

When one considers these two favourable factors, and the still more important one of the extensive markets for the produce in England, and the continents of Europe and North America, it is clear that the cultivation of the Banana in Jamaica is capable of tremendous expansion and that it should figure as a very important factor in the development of the island.

The most favourable time for planting is from February to April, and suckers planted at this time may generally be relied on to mature their crops at a little later period the following year. Earlier planting is sometimes practised in the warmer soils, but even then it is generally found that the spring-planted suckers fruit at the same time, and with the earlier planted ones there is the cost of at least one extra cleaning. What is of far more importance, however, is that the earlier planted suckers frequently "shoot" in October, when the bunches take five to six months to reach maturity, and, owing to this slow growth, they produce small, ill-shaped fruits, while those planted in early spring shoot the following spring, mature their bunches in two or three months, and produce large, well-shaped fruits.

The distance of planting varies considerably, some growers planting eleven feet each way with single suckers; some placing double suckers fourteen feet apart each way; and others planting three suckers together at sixteen feet apart. All these methods appear to give good results, and although closer planting is frequently practised with good results so far as the first crop goes, for the succeeding crops, which are called ratoon crops, it has distinct disadvantages. Therefore the distance of planting is a most important factor in determining the final success of the plantation. It is scarcely possible to grow more than about four-hundred-and-fifty stems to the acre and secure suitable suckers for subsequent crops. Those who endeavour to exceed this figure not only suffer from heavy losses of suckers, but also from the fact that even those which do succeed take so long to mature their fruits that only a proportion of them may be harvested in the one year.

It is the pruning, which governs the timing of the sucker, that calls for the greatest knowledge and judgment in Banana growing. Skilful pruning of the main growths which have borne fruits ensures the production of large bunches, and enables the grower to place his crop on the market to meet the highest prices. Whereas in April or May all reasonably good bunches may be accepted at a favourable price, because the market is active, in October all bunches which are slightly inferior to the nine-hand standard may be rejected, and the price even then may be only moderate because the market is dull.

Both in America and Europe the consumers want Bananas during the spring months, when the local supply of fruits is not so plentiful, but in the later part of the year home fruits enter into the competition and the market will only absorb the very best, and not many of them.

Although in very fertile areas and under good cultivation the fourth, fifth or even more ratoon crops may be taken, it is more advantageous generally to clear and replant the ground after the third crop. When lengthy ratooning is practised it is seldom that satisfactory suckers may be left sufficiently low in the ground, and not only do the subsequent plants suffer more severely in periods of drought, but they offer less resistance to high winds. Further, lengthy cropping seldom produces a high percentage of standard-sized bunches, and as the commercial unit is based on a nine-hand bunch it is naturally the object of every grower to produce so high a percentage as possible up to standard size. No extra price is paid for a bunch over nine hands, but every bunch below that is seriously penalised. If the price of a nine-hand bunch is fixed at two shillings, an eight-hand bunch is only paid three-quarters; a seven-hand bunch one-half; and a six-hand bunch one-quarter; therefore, although a six-hand bunch may be worth intrinsically two-thirds, it only fetches one-quarter in the market.

The Panama disease is much dreaded amongst the growers, but, serious as it is, it is satisfactory to learn that it is not gaining on them. The Department of Agriculture adopts vigorous methods to prevent the spread of the disease; it encloses infected areas immediately and prevents the movement of Banana refuse for any purpose. The Department is also working assiduously to produce immune varieties, but this must of necessity be a somewhat slow process, as an extremely low percentage of Banana fruits produce seeds, even when artificially pollenised.

The variety Gros Michel is at present the most widely-grown, and it appears to have all the qualities that a commercial variety should possess. Once the plant breeders have produced an immune variety possessing these qualities, one of the greatest dreads of the Banana grower will have been removed. There is a small variety, Almeido, which is unquestionably excellent and popular with those who like a dainty fruit. It has a very fine flavour, but is only three inches long and has no commercial value.

The drying of Bananas for the production of so-called Banana Figs, is a growing industry in Jamaica. It was my privilege to see the process in operation and to sample the finished product, which is equal in every way to dried Figs, with the advantage of no seeds. The fruits are carefully selected, skinned, laid on perforated trays and subjected to a gradual drying process whereby all the water is extracted. The "Figs," which are highly nutritious and palatable, are then packed in 28lb. boxes ready for export. *W. Auton.*

"BREAKING" IN TULIPS.

The first important step towards the elucidation of the mysterious phenomenon of "breaking" in Tulips would be to find some record of how and when it was first observed in garden varieties. Failing such a record, the fact that no true wild species has been known to break either in its natural habitat or under cultivation makes the problem all the more difficult to solve. How did "breaking" first come about, and what is the cause?

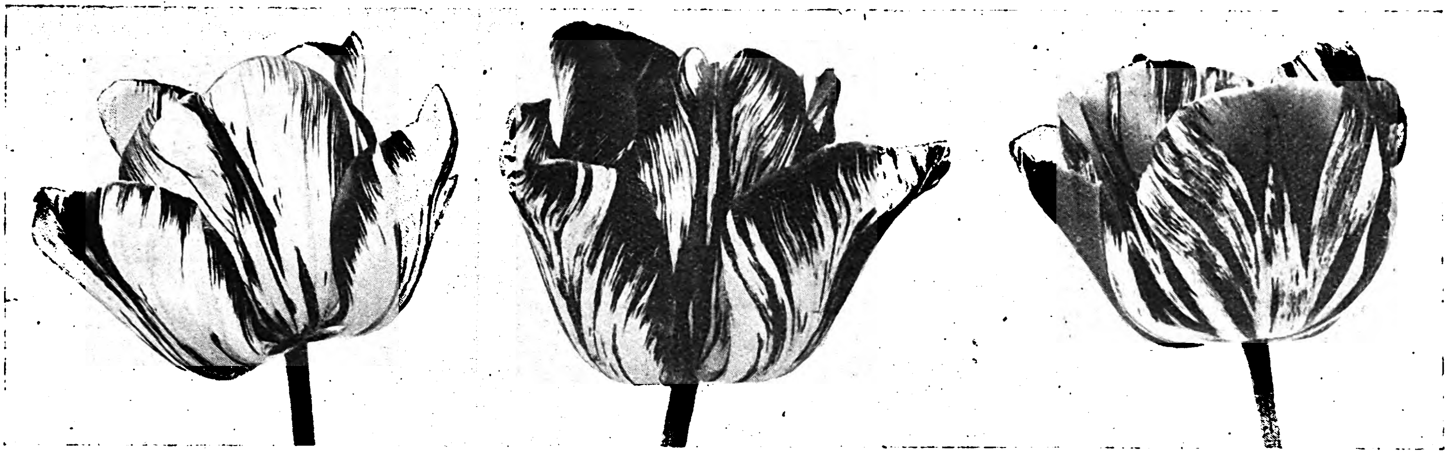


FIG. 213.—BREAKING IN TULIPS.
1. 2, and 3, "breaks" in the variety Bartigon, induced by grafting.

"Breaking" in Tulips is so well-known to horticulturists that a description would be superfluous here, but the mottling of the leaves and the somewhat reduced stature of the "broken" plant (with the exception of the flowers) suggests some kind of pathological condition. No parasitic organism can be found to account for this condition, but some light has been thrown on the nature of the active agent causing "breaking" by a series of experiments started at this Institution in September last. The results have shown that "breaking" is infectious, and may be transmitted from bulb to bulb when in the dormant condition by means of bringing the internal tissues of a healthy bulb in contact with freshly cut living tissue from a broken bulb, and moreover the infected tissue must be brought into close contact with the young developing flowering shoot of the current year in order to produce any immediate effect.

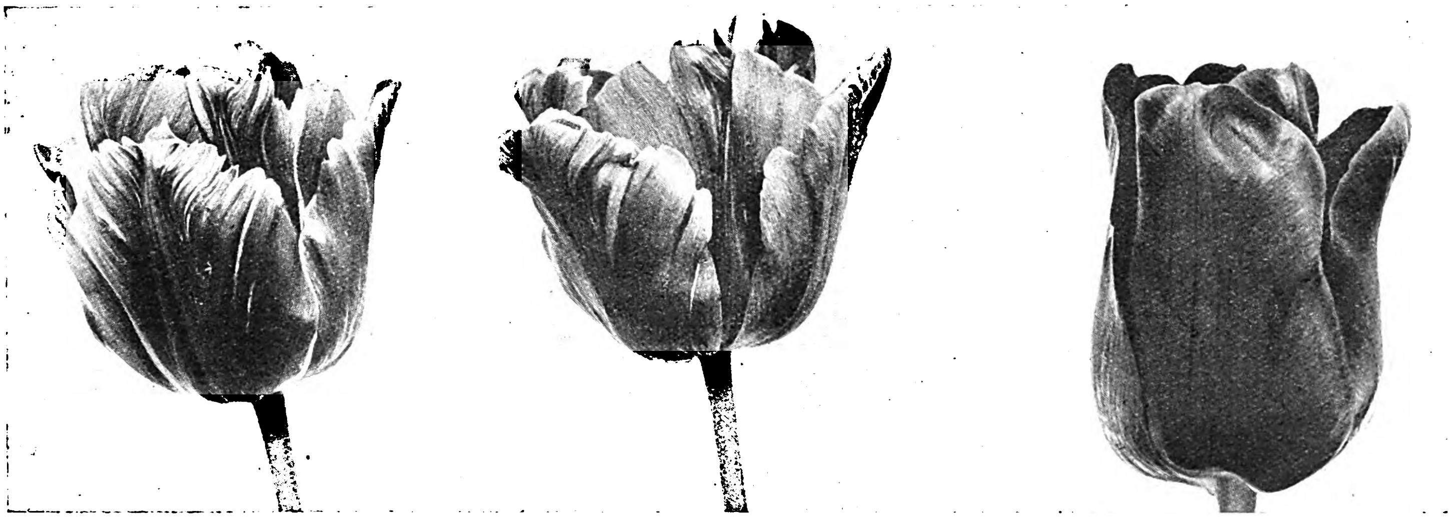


FIG. 214.—BREAKING IN TULIPS.
4 and 5, Bartigon "breaks" and "parroting" induced by plugging; 5, untreated control, *i.e.*. pure Bartigon.

The experiments were made on the May-flowering variety Bartigon, a crimson breeder which does not break very readily. The bulbs were secured from the growers and treated in various ways before storage. Some were plugged with tissue cut from a "broken" bulb of another variety by means of a sterile cork borer; the plugs of broken tissue were pushed well down into the bulb as near the growing point as possible, and immediately sealed up with melted paraffin wax and Canada balsam, to prevent chance contamination and evaporation. Other healthy Bartigon bulbs were sliced in half vertically, as close to the growing point as possible without injuring it, and another "broken" bulb of a different variety treated in the same way. The halves of the two bulbs with growing points were tied tightly together with raffia and the edges of the cut sealed up as above.

The bulbs were then stored for six weeks in the ordinary way.

Both the above treatments gave positive results. The average percentage of "breaks" induced by plugging with "broken" tissue (including forty-six flowering plants) was 19·3 per cent., and that by grafting with three different "broken" varieties (including eighty-two sets) was 26·6 per cent. None of the controls, whether plugged, grafted, or left untreated, showed any trace of "breaking." Plugging, both in control and treated bulbs, caused considerably more damage than grafting, and the percentage of plants which failed to flower was high. Moreover, plugging with a small amount of infected tissue caused much less pronounced "breaking" than that which occurred among the grafted bulbs, and was accompanied by slight "parrotting" in the flowers. This parrotting was not due to injury, as the control plugged bulbs had normal margins to the petals.

The different degrees of breaking and parrotting are seen in the accompanying photographs.

A full description of the experiments will be published shortly elsewhere. *D. M. Cayley, John Innes Horticultural Institution.*

THE GENUS PRIMULA.

(*Continued from page* 420.)

BLINII (Lévl.) Bline's P.

(Souliei.)

THIS delicate, dwarf plant produces a tuft of smooth, or slightly downy, green, non-mealy leaves about one inch in length and a quarter-of-an-inch wide; the blade tapers somewhat abruptly into a very slender stalk, and the margins are furnished with coarse teeth. The flower stem is solitary and reaches a height of about four inches, and bears an umbel of three to five rose-coloured blossoms, with each of their five segments divided at the tip into three smaller lobes; the teeth of the calyx are pale green, spotted or stained with rose colour.

Flowers in June. Inhabits rocky turf on the summit of the Lo-Chan range in Yunnan, western China, at about 10,000 feet above sea-level. According to Wright Smith and Forrest this is P. oresbia, Balf. f.

Culture: Good fibrous loam, leaf-soil and limestone chippings, in a moist, half-shady spot, is indicated.

BONATIANA (Petitm.). Bonat's P.

(Bella.)

A very minute plant with a close tuft of smooth, non-mealy, oval, or nearly circular leaves, about half-an-inch long, tapering at the base into a narrowly-winged stalk; margins sharply toothed. Flower stem half- to three-quarters-of-an-inch tall, bearing a solitary purple-lilac blossom, about half-an-inch across, with oval, notched and toothed lobes, and a cylindrical tube with a dense tuft of snowy-white hairs in the throat.

This little gem is considered to be a microform of P. bella, and grows on Mount Sila, Upper Mekong, probably under the same conditions as the above-mentioned species.

Culture: As for P. bella.

BOOTHII (Craib). Booth P.

(Petiolaris-Sonchifolia.)

A smooth perennial, with a thick rootstock furnished with numerous roots. Leaves about two-and-a-half inches long, thin, variable in the same specimen, elliptic, broadly spathulate, elliptic-spathulate or oblong, blunt or rounded, with broad, or narrowly-winged stalks, or nearly stalkless; margins furnished with irregular, more or less sharp teeth. Flower stem about three-quarters-of-an-inch tall and bearing an umbel of about twenty-five blossoms, pale purple with a greenish-yellow eye, on stalks half-an-inch to two inches long, clothed with capitate, glandular hairs. Corolla clothed when young with capitate glandular hairs outside; tube about five-eighths-of-an-inch long, cylindrical, the segments being broadly wedge-shaped, about one-and-a-quarter inch across, sinuately lobed or trilobed, the centre one again divided.

Flowers in February. This plant is found on cliffs in wet moss in shade, and where the atmosphere is more or less at saturation point, in the Bhutan Himalaya, at 7,000 to 8,000 feet above sea-level.

Culture: Peat, leaf-soil and chopped Sphagnum-moss in shade and moisture should suit it, and it probably needs protection in winter.

BOREALIS (Duby.). Northern P.

(Farinosae.)

A minute, arctic species with smooth, lance-shaped, spathulate, or wedge-shaped-oblong leaves, about half-an-inch long, with more or less revolute, irregularly, sparsely toothed margins; blades sessile or tapering into a winged stalk. Flower stem three-quarters-of-an-inch to two-and-a-half inches tall, bearing an umbel of three-to five blossoms, three-eighths- to half-an-inch across, on slender stalks, a quarter-of-an-inch to five-eighths-of-an-inch long. Corolla probably rose or lilac, with broadly heart-shaped, deeply-notched lobes; tube as long or longer than the calyx. This tiny plant is allied to P. farinosa, and is found in damp, rocky places in north-eastern Siberia. Var. parviflora (Duby.) is a smaller plant than the type and has ovate, or ovate-lanceolate leaves, with obscurely-toothed or nearly entire margins, and they are usually nearly stalkless.

This plant is found on the Siberian shores of the Bering Straits.

Culture: It may be grown in fibrous loam and limestone chippings in a moist, half-shady spot.

BOREIOCALLIANTHA (Balf. f.). Northern-Calliantha P.

(Nivales-Calliantha.)

Perennial, probably not of long duration. Leaves two to four inches long, lance-shaped, covered with yellow meal, tapering to a narrowly winged stalk, and very pointed at the tip; margins minutely scalloped. Flower stem four to twelve inches tall, bearing a one-sided, few-flowered umbel of purple blossoms, about one inch across, with rounded, notched lobes.

Grows on the mountains of the Chungtien Plateau in eastern north-west Yunnan.

Culture: Good loam and leaf-soil in a damp, open spot is indicated.

BOVEANA (Decne.). Bove's P.

(Verticillata.)

A rather striking perennial species allied to the Abyssinian Primrose, remarkable for the large, oval-lobed and toothed bracts, which form a kind of involucra to each whorl of flowers. It produces a tuft of thin, more or less mealy, or quite smooth, diamond-shaped or spathula-shaped leaves, two to eight inches long, blunt or very pointed, tapering into a winged stalk; their margins are furnished with broad or narrow, rather sharp teeth. The flower stem reaches a height of about six inches, and bears two or three superposed umbels of yellow blossoms, borne erect on fairly long stalks. Corolla about half-an-inch across, divided into five broadly ovate, scarcely notched lobes; tube cylindrical, narrow below, much swollen upwards.

Grows in damp, rocky places amongst short herbage on Mount Katherin, in the southern portion of the Sinai peninsular.

Culture: It should be potted in fibrous loam, leaf-soil and sand, and treated as a cool greenhouse plant. Introduced in 1826. *Bot. Mag.*, t. 2,842, under P. verticillata.

BRACHYSTOMA (W. W. Sm.). Short-mouthed P.

(Candelabra.)

A smooth, hairless plant, with a spreading rosette of broadly lance-shaped, papery leaves, two-and-a-half to four-and-a-half inches long, narrow and pointed at the tip, tapering below into a narrowly-winged stalk; margins furnished with small teeth. Flower stem six to nine inches tall, slender, bearing an umbel of two to six golden-yellow blossoms about five-eighths-of-an-inch across, with nearly square, slightly notched segments, and a cylindrical tube about three-eighths-of-an-inch long, ringed at the mouth.

Flowers in June. The above description is from young specimens, superposed umbels are probably found in the adult plants. This species is found in wet grassy places on the banks of mountain torrents in the lower alpine zone of the mountains in the Shing-Hong region of Upper Burma, at 9,000 feet above sea-level.

Culture: Plant it in fibrous loam, and treat it as a bog plant in summer; protection in winter is probably necessary in most districts. *A. W. Darnell.*

(*To be continued.*)

NOTICES OF BOOKS.

A British Garden Flora.*

THIS is rather an ambitious book, being in fact a Genera Plantarum of the Dicotyledons, Monocotyledons and Gymnosperms generally found in British gardens. Dr. A. W. Hill, C.M.G., of the Royal Botanic Gardens, Kew, writes a foreword to the book, Part I of which is entitled introductory, and includes descriptions, with illustrations, of the vegetative organs, the floral organs, transplanting and pruning. These instructions are followed by classification, identification, and the vegetable kingdom. Part II deals with Angiosperms, and Part III with Gymnosperms. The general index is a lengthy one, including both botanical and common names.

The author states that an experienced gardener is able to tell the name of a plant if he has seen it before, or may make a shrewd guess if he has not seen it previously, whereas an experienced botanist could in most cases identify the family, or even the genus, although he has never seen it before; but one must look for the secret of its affinities in the flower itself. To simplify the identification of an individual plant the author analyses the characters singly instead of collectively, and that leads to the family, even if the plant is not generally characteristic of it. This he does by means of an artificial key, by which exceptional and doubtful cases are included. This leads to the same family being indicated several times, including Saxifragaceae, and even Liliaceae, amongst the Monocotyledons. If the student has rightly analysed the characters of his plant, the key to the family will give the right genus. This analysis of an individual, uncommon in a family, reminds the writer of these notes of the difficulty he had in finding the family or the genus of Parnassia by a synopsis in a British flora. After trying for some days to locate the plant with five stamens and a hypogynous ovary, he had recourse to the Linnean System and found the genus and species in five minutes. The key in this book, if more complicated, is more correct, and the characters lead to Saxifragaceae, most members of which have the ovary more or less inferior. The key to the family soon singles out Parnassia.

There is a considerable amount of alteration in the classification or sequence of families. The Caryophyllaceae commence with Lychnis, instead of Dianthus as in the older books in use. Herniaria is placed in this family as an apetalous member, and, presumably, all the rest of the Illecebraceae. This family is followed by Portellaceae, and five families taken from the Incompletae, including Chenopodiaceae, which are thus made apetalous members of the Thalamiflorae. There is much to justify this in the form of the embryo and the pollen, which are identical in these families. The form of the pollen suggests that all these families had anemophilous flowers, and that the pollen of the more showy members of the Caryophyllaceae has become highly ornamented or modified to fit it for transport by insects, although fundamentally the form remains the same. The Berberis and Laurus families are placed side by side in the Thalamiflorae, both having hinged lids to their anthers. Proteaceae to Aristolochiaceae are placed in the Disciflorae; and Ulmacea to Empetraceae, to the number of eleven families, and including all those that bear catkins, are placed in the Calyciflorae. The Monocotyledons commence with Alismaceae, probably on account of the free carpels, but the monoecious or dioecious flowers constitute a considerable modification in some of the genera.

The Gymnosperms are placed last, and the relationship of Ginkgo to the Ferns is up to date in the information supplied, but the spelling, Gingko and Gingkoaceae, is peculiar. The keys to the Coniferae are simple and easy to follow; but no mention is made of the Gnetaceae, although several of them are in cultivation.

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* *A British Garden Flora. A Classification and Description of the Genera of Plants, Trees and Shrubs Represented in the Gardens of Great Britain, with Keys for their Identification*, by Lt.-Col. J. W. C. Kirk, D.S.O., B.A., F.R.H.S. London: Edward Arnold and Co., 1927. All rights reserved. Price 42s. net.

Lt.-Col. J. W. C. Kirk is a son of the late Sir John Kirk, well-known for his long service in East Africa, and ever since his school days has been an ardent student of botany, at first British and afterwards South African, and he still continues in leisure time to devote himself to the botanical side of horticulture. The various keys to families and genera alone show that he has a wide knowledge of the structure of flowers and must have dissected thousands. The production of a "Genera Plantarum" in English is no small accomplishment; while the technical terms are few, and in a short index of them the student is referred to some page in the introduction where they are illustrated by a drawing or explained.

Bush Fruit Culture.

Raspberries are apparently by far the most important of the bush fruits grown in America, for no fewer than forty-nine of the 121 pages of this little book* are devoted to this crop. Blackberries apparently stand next in importance. Currants are not much appreciated, particularly Black Currants, which, the author, says, have a peculiarly musky flavour and odour and have never become very popular in the United States. Gooseberries also have failed to gain favour, the ripe dessert fruit being almost unknown. The crop is picked green and used almost exclusively in jams and sauces; and even in these manufactured products the fruit is not known to many. Three groups of Raspberries are cultivated—red, black and purple—the last being hybrids between the red and black, and surpassing both parents in yield.

Attention is drawn to the important fact that part of the root system of Raspberries is near the surface, for which reason cultivation next the rows must be shallow. A horse cultivator with teeth shortened on the side next the rows is used in large scale operations. For garden use a good iron rake is recommended for the same purpose, provided that cultivation has not been neglected until the ground has become hard and weeds large. But a mulching system is considered to be often more satisfactory than cultivation. If sufficient straw, old hay, or similar material, is used to prevent the growth of weeds, the moisture supply is maintained and the crop thrives.

A useful hint is offered for those who wish to obtain a large increase of a valuable disease-free stock of a new variety. The growth of suckers may be stimulated by cutting the underground stems or otherwise disturbing them. They are not far below the surface, and deep cultivation close to the rows in early spring will usually start a forest of suckers. In the garden the same effect may be obtained by thrusting down a spade several tines in a circle a few inches from the base of the parent plant. Obviously the converse holds good; and unwanted suckering may be reduced by avoiding root disturbance. Under favourable conditions, we are told, it is possible to transplant young suckers in spring when they are about five or six inches high. It is then easier to select healthy plants than during the dormant season. Since virus diseases of the mosaic type have become so widespread, this method of starting new plantations has gained steadily in favour. This practice has been adopted in England with marked success, the suckers obtained being well rooted and making a better start when planted in their permanent quarters than those obtained in the ordinary way.

Most American growers cut the canes back to a height of three feet to five feet, according to vigour, before growth starts in spring. Very severe pruning reduces the yield and delays ripening. Gardeners sometimes take advantage of this method of delaying the harvest, and provide a supply of Raspberries well past the normal season by pruning a part of the row severely.

Currant cuttings apparently do not root so easily in America as they do with us, for we are told that mortality is likely to be high if they are planted so soon as they are taken. It is usually better to tie the cuttings in bundles with the butts even, and bury them in a well-drained spot, upside down, with an inch or two of soil over the base. A callus then forms on the cut ends from which roots are produced readily when the cuttings are finally planted in the nursery rows. This method might be worth trying in the case of hard-wood cuttings that are difficult to strike.

Altogether this is a very practical little book which fulfils the author's purpose of presenting a compendium of standard American practice in clear and readable form. Naturally, it will not make a wide appeal to English gardeners.

APIARY NOTES.

From many letters received, I find that some bee-keepers know little of the economy within the hive, the processes that go on creating that wonderfully organised community we call a "stock" of bees. Like every other scientific fact it has practical importance, and by understanding the economy of the hive we are helped to wise management. Not that a stock of bees may be "managed" overmuch; continual interference can only hinder progress. The bees ordain their activities so wisely that it is likely that a wild colony in a tree will do better than those held in captivity. They rarely suffer from hunger, for the dearth of one year is provided for by the abundance of the season previous. Natural swarming tends to eliminate disease, and no artificial hive can provide better accommodation, from the bees' point of view, than the hollow limb, or cavity in a tree trunk, which they choose for a home.

But man desires the honey the bees store, and this desire produces all the complications and difficulties met with by the bee-keeper. How to take the honey he wants and not injure the prosperity of the hive, is the problem, and to do it successfully demands a thorough understanding of the economy of the hive.

The method followed by our grandfathers, before the invention of the moveable frame hive, kept so near to Nature that any serious violation of natural law was impossible. What we term the "cruel" device of the sulphur pit may have been wasteful, but it was not so liable to error as modern methods. Self-interest prevented the destruction of too many stocks, and those left were generally the young swarms with virgin queens. In a rough and ready way, we may say, the previous generations treated their bees as annuals.

But the bar frame allowed honey to be taken away without destroying the bees. It also gave great scope for meddling curiosity and ill-conceived efforts at assistance. It removed all need for new colonies, and swarming became a nuisance, and in some degree a disaster. It meant great ease in manipulation, but the very ease with which manipulation was possible led to over-manipulation. Imagine your own home suddenly unroofed; a blast of cold air poured upon you whilst you stand bewildered with no clothes on; your wife's privacy invaded at the most embarrassing moment; and your children, newly born, laid out on the grass uncovered. Not at all a pleasant experience, but the bees have it now as a usual and frequent experience. They do not enjoy it, and it upsets their calculations every time it happens; it disorganises their work for quite a long time, besides giving them much extra work in propolising again all the cracks and crevices that you have opened.

Now the life of a stock is indefinite. The old combs are never destroyed, the combs of honey are extracted and returned and if a swarm issues it is returned. A huge colony is the ideal, and every conceivable device to produce the maximum number of workers under one roof is welcomed.

The result is not always good, and if it is to be good it means care, and great care. Those old combs are liable to contain disease germs, those extracted combs may be taken from a diseased colony and given to a clean one, brood rearing may be encouraged when nature would discourage it, queens may be raised in colonies that are no good, and good colonies may never be allowed to raise a queen at all. Nature works to an average; man in his attempts to work to an ideal may produce something less than the average. The worst attack of foul-brood I ever knew came about through manipulation. In one season nearly one hundred colonies were successfully inoculated with the virus, and all by the simple process of changing combs about throughout the apiary. Foul-brood is a very slow traveller in the ordinary way, and probably would take years to travel through an apiary, but carried in the hands of a nimble apiarist it may spread rapidly in a few days.

It is well therefore to know what we are doing when we meddle with the bees, and to consider the physical conditions under which a stock works when in a state of Nature. First of all, temperature! The brood of bees should be reared in a temperature round about 96°. A very hot day in summer may reach that figure occasionally, but we human beings do not like it, and few English folk are very energetic when the thermometer reaches 96° in the shade. To obtain that temperature in the hive the bees must help, obviously. They require it every day during the active season, and heat is therefore generated, and to generate heat the bees have to consume food. The more food they have to consume the quicker they exhaust themselves. There is also more house work to do within the hive. The kitchen is so busy that the cooks have much tidying up to do.

Now, consider further how long and how difficult it is for a stock to restore the temperature to 96°, after you have pulled the happy home to pieces. It takes a lot of work and it takes a lot of honey. You waste honey every time the hive is opened needlessly. Moreover, examine the natural home of a bee. There is only one way by which air—cold air—can enter; it is always at the bottom, beneath the cluster. The combs are fastened at the top of the tree-trunk, so closely together that the bees fill up the space completely with their bodies. They are fastened at the sides to the trunk, and only the bottom is open to the outer air. The bees simply refuse to be hygienic after our fashion, and they resolutely object to a draught. They never open their windows, preferring a fan, which they switch on and off as they feel inclined. With their wings they pump air into the hive when it is needed, and every other entrance for air they block up. Unregulated air they simply detest.

Yet man, with the bar-frame hive, tells them that they do not know what is good for them!

This statement I shall endeavour to justify in my next article. *John Mavie.*

MARKET FRUIT GARDEN.

In fruit-growing it is a dry May rather than a dripping June which "puts all things in tune," but this year, unfortunately, we did not receive this blessing. Instead, the weather was mainly cold and wet, the rainfall at my place amounting to 2·67 inches, more than three-quarters-of-an-inch over the average for the month. Moreover, there were many ground frosts, and as much as 4° in the air on one occasion. Small wonder, then, that few crops have set well, and that most of them have an unhappy appearance. Bush fruits, which started the season looking vigorous, now, except in a few favoured spots, are yellow in the leaf, the result, as a fellow grower put it, of "cold feet." Plums are full of dead wood, and Apples also show many dead shoots due to canker. The truth is, we are paying for the excessive wet of last year and of the recent winter.

Crop Prospects.

Although prospects are always better than one imagines at this time of the year, I think this will be a lean season for me. Frost robbed me of a bountiful crop of Plums. For once Rivers' Early Prolific has failed me, after blooming most profusely. Czar carries a good deal of fruits except where the trees bore a breaking-down crop last year, as most of mine did. Victoria and Belle de Louvain have set very light crops, which will no doubt be quite useful. Monarch is better, although a long way short of its promise. President is almost a total failure. The only really full set is on Pond's Seedling, which will probably have to be thinned to bring the fruits to good size and prevent the breaking of branches. This variety blooms very late, and escaped the worst of the frosts. More damage than I thought was done to Black Currants by frost. They are good in spots; but over most of the area they have "run off" badly. Gooseberries are a full crop but so far small and discoloured by frost. Strawberries I have only in my private garden, where they are sheltered, and they promise very well, as do Raspberries. Of Apples, I did not expect much of a crop, as I had a very heavy one last year; but some varieties bloomed profusely and raised hopes that have not been fulfilled. Curiously enough, those tender varieties such as Cox's Orange Pippin and Beauty of Bath have set best of the dessert kinds, and the fruits so far are clean and growing well. Worcester Pearmain, which showed great promise, has set very few fruits; the same applies to Blenheim Pippin. Amongst cooking Apples, Early Victoria, Queen, Royal Jubilee and Newton Wonder give most promise; but Lane's Prince Albert and Bramley's Seedling will be very light with me.

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* *Bush Fruit Cultivation*, by R. A. Van Meter, Professor of Pomology, Massachusetts Agricultural College. London: Kegan Paul, Trench, Trubner and Co.

Spraying Results.

This is one of those seasons when one realises the blessing of tar-distillate washes. In my district trees which were not sprayed in winter with one of these preparations show plenty of aphis damage in many cases, Plums being in a hopeless condition. One patch of Black Currants which I left unsprayed because the buds were dangerously forward developed a bad attack of aphis; the bushes still look more or less crippled, in spite of dipping the curled tips of the shoots in soap and nicotine wash and subsequently spraying the entire bushes with the same mixture. Fortunately, the bulk of the crop was sprayed with tar distillate and is perfectly clean in consequence. The effect on Currants is wonderful.

This is a very bad season for Apple scab in my locality, to judge from unsprayed trees in neighbouring gardens. My spraying programme for the prevention of this, the worst of diseases, it may be remembered, is a pre-blossom application of Bordeaux mixture (6lb. copper sulphate, 8lb. lime, 100 gallons water), and two after-blooming sprayings with weak lime-sulphur and arsenate of lead. The strength of lime-sulphur used is one part in eighty for all varieties except Cox's Orange Pippin and Beauty of Bath, for which only one in one hundred is employed. Once again this programme has given, so far, splendid control of scab, although conditions were none too easy. The pre-blossom wash was applied during dry weather, but frequent showers occurred whilst the first of the after-blooming applications was being given. Yet the trees receiving this treatment are at present free from scab with one or two trifling exceptions. Undoubtedly this programme may be depended upon to control scab in my conditions. Unfortunately, however, it has not proved to be absolutely safe. In two previous years the same treatment did not cause a sign of injury, but this season there has been serious defoliation in one plantation, Cox's Orange Pippin being affected most. These particular trees were looking wonderfully well before they were sprayed. They had the pre-blossom application at the advanced pink bud stage, when they were very leafy. No damage appeared until the first of the after-blooming lime-sulphur washes was given; soon after that down came most of those leaves which had previously been coated with Bordeaux mixture. It was touch and go with the crop, but fortunately the trees were making plenty of fresh leaves, and so far the fruits have set as well as any are setting this season. Apparently some chemical action takes place when lime-sulphur falls on to leaves already coated with Bordeaux mixture. I noticed that a rusty deposit was formed. But why did not this occur in previous years, and even this season, in other plantations? I think the answer to this question is to be found in the conditions in which these trees were sprayed. Wet and cold weather followed the Bordeaux spraying—just right for Bordeaux scorch; and very bright hot weather was experienced whilst the lime-sulphur spraying was done—just the conditions for sulphur scorch. I shall not let this mishap frighten me from using Bordeaux mixture before blooming, for I have evidence this season that it is very much better at that time than lime-sulphur. I used the latter at a strength of one in forty on several batches of trees, and a certain amount of scab has appeared on the leaves. Moreover, lime-sulphur at this strength causes a good deal of scorching of the first leaves, although the recovery is rapid and scarcely any leaf dropping occurs after blooming. It seems to be quite true, as some experimenters have pointed out, that a pre-blossom application of lime-sulphur renders the trees immune from lime-sulphur injury after blooming. I have ample evidence of this. One combination which I tried on a batch of Cox's Orange Pippin did no harm at all, and the trees now look very well. This was a pre-blossom spraying with Bordeaux mixture, as with the other trees, but with colloidal sulphur substituted for the lime-sulphur after blooming. This immunity from injury may be a matter of chance, but I should not expect the quite non-caustic colloidal sulphur to harm anything. Whether it is of much use against scab remains to be proved, but it is quite likely to be at least as good as the very weak lime-sulphur solutions I have been using. I think that probably Bordeaux mixture and colloidal sulphur will form my main programme next year, with perhaps a rather greater excess of lime in the former when the weather seems likely to favour scorch. In my conditions the pre-blossom application seems to be by far the most important. If this only is given the control of scab is very considerable. Colloidal sulphur, by the way, is used at the rate of 4lb. to one hundred gallons of water, with the addition of arsenate of lead where needed; it is a good deal more expensive than lime-sulphur.

Research Work.

Members' Day at the East Malling Research Station gave one a splendid opportunity to realise the enormous amount of careful work being done there for the benefit of fruit-growers. Parties of the visitors were conducted to each of the several laboratories in turn, and given an outline of the main problems now receiving attention in each department of research. One could not fail to be greatly impressed by the keenness and capability of the staff, the great value and wide scope of the work being done, and the organisation of the undertaking as a whole. One of the exhibits which interested me most was an Apple tree lifted with all its roots intact, and rearranged so as to show the extent and position of every root. Several trees, on different root-stocks, have been lifted in this way, and a very big undertaking it is. Some sixty tons of soil have to be shifted at each excavation, and each root carefully traced and its position marked on a plan, so that the system may afterwards be rearranged. The tree inspected is hanging over the well of a circular stairway, with the roots suspended by threads. The extent of the root-system was an eye-opener to me, particularly as the tree is only a dwarf on Type IX Paradise. The lateral roots run for many feet beyond the spread of the branches; and a surprising number of roots penetrate vertically downwards into the soil, some of them going down so far as eight feet, where they were stopped by a layer of ragstone. Some roots run almost parallel with the ground for a few feet, and then dive straight downwards. An inspection, in the plantation, of the hole from which one of these trees was dug helped one to realise still further the extent of the root-system and the way in which the roots of different trees in an orchard must overlap. Growers who are in the habit of putting little lumps of manure around the stems of their trees must feel foolish when they see this exhibit.

Another most interesting result which may now be seen in the plantation of Apples is the effect of potash fertiliser on trees which used to receive only the customary generous dressings of manures mainly of a nitrogenous character. Sulphate of potash has been given in addition for three or four years, and the benefit has gradually become manifest, until now it is most striking. Standing on the dividing line between the potash and no-potash plots at the time of my visit, the effect of this fertiliser could be seen immediately in the size and profusion of the leaves. Potash, at East Malling, gives the trees increased vigour, tougher leaves, and larger fruits of brighter colour. A report of this experiment is to be published soon, and cannot fail to be of great interest and value. *Market Grower.*

NEW FERTILISERS.

Quite a number of new fertilisers are being offered to farmers and gardeners, and each is commended on some special ground. So far as their value as plant food is concerned, there is little new about them. Every schoolboy knows that there are three important plant-foods—nitrogen, phosphorus and potash. The first, nitrogen, is the important constituent of sulphate of ammonia, nitrates of various kinds, and cyanamide; the second, phosphorus, is active in superphosphates, basic slag, bone-meal, and so on; the third, potash, is applied as kainit, muriate or sulphate of potash. All of them are found in nature's manures, such as dung, guano, dried blood, shoddy, or even in horn and hoof meal.

It will be understood, therefore, that the new fertilisers Nitro-chalk, Urea, Nitrates of Lime and Ammonia, and Nitrophoska, although bearing strange names, are not really new to the plant by the time that the great chemist mother earth, has worked upon them. Nevertheless, they all make nature's business easier. Thus, the newest of all, Urea (a great triumph for the chemists) is made freely in every animal body, and is, in fact, the concentrated essence of animal excreta. Urea is very rich in nitrogen, in fact, so rich that a handful of it has the same value as a barrow-load of farmyard manure, a fact that makes it correspondingly dear. Nitrates of Lime and Ammonia is a fertiliser which is claimed to have all the virtues of the old favourites, sulphate of ammonia and nitrate of soda, together with lime—the soil sweetener—and without the occasional disadvantages of the older chemicals.

Nitro-chalk is very much the same thing as the last, but the lime is in a much freer state. Last of all, Nitrophoska breaks new ground, for it is an attempt to supply in one compound all three plant foods, nitrogen, phosphorus and potash, combined, too, in the relative proportions which experience has shown is best for the plant. This fertiliser at present comes from Germany, and is on its trial here. The idea is undoubtedly good; as matters stand, the application of a complete fertiliser necessitates the purchase of three (at least) distinct substances, and mixing is often difficult and always a skilled process. This would be entirely obviated (and carriage saved) if a complete manure could be supplied. Reports from Germany on Nitrophoska are very favourable, and if similar results are obtained here, there should be no difficulty in manufacturing the same (or an equivalent) fertiliser in England, at Billingham for instance.

In these trying times, when the experience of the past seems to offer so little help, these new aids to farming and gardening are well worth trying, for they represent definite progress in the application of science, and of big business as well, to modern, changed conditions in agriculture. To horticulturists these new fertilisers should have a special appeal, for in these days supplies of natural manures are not easy to obtain, and such a substance as Urea, being identical with the main fertilising ingredient of dung, may hardly be regarded as an "artificial" copy of nature. One of the main virtues of dung is undoubtedly that it supplies organic matter, but, in the garden, at any rate, there is generally an abundance of waste vegetable matter which ordinarily goes to the "smother fire," but which, with the addition of Urea, should be a perfect substitute for the familiar product of the stable or cow-house. *A. B. Bruce.*

HOME CORRESPONDENCE.

Osmanthus Delavayi.—In your issue of May 19 (p. 355), *J. F.* in his interesting article on Osmanthus Delavayi, mentions a specimen of that plant at Westonbirt, Gloucestershire, of which he states: "May have been one of the earliest planted, for it is about two-and-a-half feet high." Surely this is no uncommon height for a plant of Osmanthus Delavayi. It may interest *J. F.* to know that at the University Botanic Garden, Cambridge, there is a fine specimen quite eight feet or more in height and as much across. It is a magnificent sight in spring, when laden with its pure-white, fragrant flowers. *Thos. Blythe, Botanic Garden, Cambridge.*

Aftermath of Winter.—When reading some recent notes from different districts anent the losses of plants and shrubs, as a result of the severe weather of the past winter, it occurred to me that it might prove useful if the writers in question gave some particulars of the soil conditions, and position occupied by the subject that has perished, as the losses are not always consistent with their reputation for hardiness. Instead of being a mere list of casualties, it would make interesting reading if an effort were made to assign the cause why one specimen perished and another did not, even within a few yards of each other. For example, after examining a Cytisus that had perished and another that had been half killed, I found that the dead specimen had formed an elbow at the ground level and the wind had wrenched it, thus breaking the root fibres near the surface; the stem became cracked and strained, and the severe weather did the rest. I believe that if a large stone had been placed over the neck of the shrub it would have been saved. The other was slightly shaded by a branch of a tree with the result that the softer and sappier growth was killed by the frost, but this one is breaking away further down. The rest of the plants being in a very exposed position, escaped unhurt. It does not follow therefore that the safest place for a pet subject is in a sheltered position. If shelter is given, with a sufficiency of sun and air, well and good, but the usual effect of too much shelter is to weaken. Some years ago, I had a frame filled with fine Parsley, which I covered up during a spell of severe weather. One day I cleared off the snow and looked inside, but all I could see was a sticky brown mass where the beautiful leaves had been. Parsley, quite unprotected, lived through the severe period. Needless to say, I kept the Parsley frame entirely open night and day afterwards, except during snow or very severe frost. Previous to that I had only kept it partially open. *George Murray, Stanton Court, Wiltshire.*

Polygala Vayredae.—I am much obliged to Mr. A. T. Johnson for his note on this subject (p. 352), to which my attention has only recently been drawn. Polygala Vayredae, in my notes on p. 317, should read P. Chamaebuxus. With regard to Farrer's description of the flowers of P. Vayredae which he quotes, namely, "butterflies of crimson with a body of gold," this is surely a somewhat inaccurate one. The wing petals of this charming subject, even at their best, are not more than bright, rosy-purple in colour. It is described in the *Botanical Magazine,* t. 9,009, under the name of Chamaebuxus Vayredae. *J. E. Grant White.*

Claytonia sibirica.—This naturalised alien from North America is a plant with considerable attractions for the wild garden, and like its congener, C. perfoliata, spreads rapidly under congenial conditions. The thick, fleshy leaves typical of the Natural Order Portulaceae, are ovate-acuminate at the base, but almost orbicular on the stem. The inflorescence is more branched, and the flowers are much larger than those of C. perfoliata, and being of a rosy-pink colour they give the plant an attractive appearance. It is listed in Bentham and Hooker's *British Flora* as an escape from cultivation naturalised in various places and it spreads rapidly where it has become established. Although probably somewhat localised, it is abundant on some of the light soils of Surrey. *A. N. R. S.*

FOREIGN CORRESPONDENCE.

ACER RUBRUM.

EARLY in April the richly-coloured flowers of the Red Maple made a welcome break in an otherwise rather dreary landscape. They are borne very profusely in dense clusters on the bare wood of the previous year's growth, and on short spurs on older wood, forming a conspicuous feature even when viewed from a distance.

The tree itself sometimes attains a height of a hundred feet or more, and forms a rounded head of noble appearance; in good examples the trunk may have a girth of twelve feet, and the bark is of a greyish hue.

In the fall, A. rubrum is one of the most attractive species of the genus, the foliage assuming brilliant tints of red and yellow, vieing in this respect with the Sumachs and other arboreal features which add colour to our landscape at that season.

Although in Britain the Red Maple does not grow so large or give such gorgeous autumn effects as it does in its native habitat, the eastern United States, it makes a handsome tree and is very satisfactory for planting in moist situations. *T. H. Everett, New York, U.S.A.*

VINE CULTURE IN PEKIN.

THE method of growing Vines out-of-doors in Pekin is extremely interesting to a European. Arriving there at the end of December, 1926, I noticed a curious curved mound of soil about three feet high and two feet thick, below and near a stout pergola arrangement. Early the next April the native gardeners descended on the mound and uncovered a stout Vine, with several rods, and this was lifted on to the trellis and secured. In a short time the buds burst, and active growth commenced. The Vine proved similar to Foster's Seedling, and did very well. Early in October the rods were pruned, a trench was dug three feet deep, many gallons of water were poured on to the roots, and the rods were laid in the trench, and covered up for their long winter's rest. The extreme temperature and the very dry winters necessitate these unusual methods. *W. W.*

PUDLIC PARKS AND GARDENS.

BATLEY Town Council has accepted the offer of Mr. and Mrs. H. Jessop, of Whitkirk, of a field off Healey Lane, Batley, for adaptation as a public park or recreation ground, and to defray the whole of the cost of the work.

HENDON Rural District Council has scheduled sixty acres of Canon's Park, Little Stanmore, as a public open space and recreation ground.

WEALDSTONE Urban District Council has decided to purchase twenty-five acres of land at Kenton for a recreation ground.

THE Salford Corporation's Finance Committee has agreed to the purchase of a lodge at Nursery Gardens, at an estimated cost of £1,000, for the fourteen acres of grounds at Broughton Park, which Mr. L. A. Clowes has offered to present to the Corporation for a park.

THE Sevenoaks Weald Parish Council has been authorised by the Kent County Council to lay-out a recreation ground at a cost of £200.

THE Chertsey Urban District Council will make application for sanction to borrow £1,064 for the purchase of about six acres of land for an extension of Victory Park, Addlestone.

THE Aylesbury Town Council has decided to purchase land for a recreation ground at a cost of £1,500.

THE Bradfield Rural District Council has received an offer from Mr. E. R. Beausire, of Hawkridge House, Bucklebury, to give a four-and-a-half acre site for a village recreation ground at Bucklebury.

SOCIETIES.

IRIS SHOW.

JUNE 8.—Although it seemed that the date of the second show of this Society was a trifle late for some of the amateur exhibitors, there were many excellent collections of Irises in the Horticultural Hall, Westminster. The chief displays were made by the trade growers, who set up imposing and fascinating collections which included the best of the Bearded flowers, now in season, and also goodly vases of many of the smaller, but very fascinating sorts, such as Iris sibirica and its many varieties, I. versicolor, I. bracteata and I. Forrestii. No doubt owing to the difficulties of the season, there were few amateur exhibitors, but their exhibits were of very gratifying quality. The classes for new varieties were spread over a considerable space and, as they included many very beautiful spikes, they attracted a great deal of well merited attention. Amongst these novelties were several of uncommon and fascinating colour shades, whose adequate description baffled the raisers and the critical visitors alike. The material on show was insufficient for us to form any opinion as to the garden value of the new varieties. It is well that raisers should produce new and improved colours in their flowers, but it is to be hoped that due attention is also paid to stamina, and that the novelties will be as attractive in the garden as on the show bench.

NEW SEEDLING IRISES.

The five classes for new seedling Irises were very interesting and, in most cases, were well contested. Except in the class for American Bearded Flag Irises, the varieties shown must not have been offered for sale, and they must have been raised and grown by the exhibitor.

The best six Bearded varieties were shown by Mrs. W. R. DYKES, Bobbingcourt, Woking, who staged the following very attractive varieties:—Vashti, sky-blue standards and velvety blue-purple falls, lined towards the base; Cloda, silvery-lavender self, with yellow lines and crest; Averil, rich yellow; Refna, metallic-rosy-bronze standards, pale purple falls; Fedalma, purple markings on cream ground; and a seedling. Messrs. O. AND P. MURRELL were a good second, and they included Snowdrift, milk-white standards and falls, with transverse lines of pale chocolate on the falls and a yellow crest; Winsome, pale blue; Trieste, Witchery, Wrath and Seraph, four good ochracea hybrids.

Messrs. O. AND P. MURRELL were first in the class for three Bearded Irises, where they showed Aquarelle, a beautiful silvery lavender; Sorcery, pale yellow with dull carmine lines; and Bezant, a lovely flower with old gold standards and lavender falls edged with golden yellow. Mr. G. L. PILKINGTON, Lower Lee, Woolton, Liverpool, was second with Manitoba, yellow self; Tasmania, old gold standards and falls with purple markings and a definite margin of old gold; and Sierra Leone, metallic blue standards, brighter blue falls and golden crest. The best single spike of Bearded Iris was Rahdi, shown by Mrs. W. R. DYKES. This is an uncommon flower of considerable charm. The standards are of grey-lavender shade, and the falls are of smoky lavender tone, with beautiful lines at the base. Messrs. LOWE AND GIBSON were second with Maisie Lowe, a large, rich blue flower with velvety falls and a pale yellow crest. Messrs. O. AND P. MURRELL were awarded an extra second prize for Romance, metallic-pink standard, purple falls and gold crest.

In the class for three new seedling Irises, excluding Bearded Flag Irises, Mr. AMOS PERRY was awarded the Society's Silver-gilt Medal for Iris chrysowegii, a hybrid between I. chrysographes and I. Hartwegii, with dainty, royal purple blooms; Iris tebract Brilliant, a hybrid of I. tenax and I. bracteata, with attractive, medium-sized flowers of shades of purplish-rose, with yellow markings on the falls and smoky standards; and Iris Delavayi pallida, which has bright blue flowers.

Mr. GEORGE YELD, Gerards Cross, won the Silver-gilt Medal in Class 16, for one spike of a new seedling Iris, other than Bearded Flag

Irises, the variety with which he was successful being Iris Lucasta, which has very dainty blooms of the I. chrysographes type; they are rich purple, the velvety falls being marked with yellow. Mr. Amos Perry received the Silver Medal in this section for Iris tebract Brilliant.

Only Mr. Pilkington showed in the class, for twelve spikes of American Bearded Irises and was awarded the first prize for good spikes of Avalon, Los Angeles, Kestrel, Freda Mohr and Polaris.

Amateurs' Classes.

There were only two exhibits in the class for a group of Bearded Flag Irises, arranged within an area of seventy-five square feet. As the space was set out on tabling only three feet wide there was little opportunity for the exhibitors to show the great decorative value of their Irises. But both were very good collections which included many beautiful varieties. The first prize was won by Mr. G. L. Pilkington, whose principal varieties were Mrs. H. F. Bowles, bronze standards and crimson-maroon falls; Bruno, a large flower which has metallic bronzy-rose standards and velvety-purple falls; Flaming Sword, rich yellow standards and smoky crimson falls, edged with deep yellow; Leonato, a tall, robust spike with silvery lavender standards and deeper coloured falls; Mother-of-Pearl, pale blue-lavender standards and falls; Romola, lilac standards with gold markings at the base, and velvety red-purple falls; Princess Osra, a pale creamy flower spotted and edged with sky blue; Amber, rich yellow; and Dream, shining pale blue. Mr. B. R. Long, Laburnum Gardens, Richmond, Surrey, was second, and he also had many exceedingly beautiful Irises. His exhibit included several very fine seedlings, and the following varieties: Olympus, a robust, handsome flower; Ambassadeur, smoky reddish-violet standards and deep velvety purple falls; and Mystic, white, marked with lilac at the base of the falls.

In the class for a group arranged on an area of thirty-six square feet, Sir William Lawrence, Bt., Burford, Dorking, was a good first, and he included splendid spikes of Clematis, Alcazar, Fro, Dalila, El Dorado, La Niege and Flaming Sword. In his second prize exhibit, Mr. G. P. Baker, Hillside, Sevenoaks, had lovely spikes of Magenta, Sirius, Grace Sturtevant, Sikh, Liberty and several seedlings. Mr. C. W. Christie-Miller, The Deanery, Sonning, was third. Mr. G. L. Pilkington was awarded the first prize in the class which provided an area of twenty-four square feet, where he showed Lord of June, Manitoba, Quaker Lady, Athene and Abenda of very good quality. There was no other exhibitor.

The class for eighteen spikes of Bearded Irises in not fewer than nine varieties was responsible for especially good exhibits. Mr. Pilkington, who was first, showed Marquisette, semi-transparent pink standards and falls lined with crimson lake; Valkyrie, greenish bronze standards and smoky crimson falls with creamy lines at the base; Prince Charming, pale lilac; and Mdlle. Schwartz, pale blue-lavender. In his very attractive second prize exhibit, Mr. B. R. Long included Etoile du Matin, white with beautifully lined falls; Réne Denis, metallic rose standards and yellow lines on pink falls; Mercedes, creamy ground with lilac lines; and Rosa Bonheur, a very decorative flower of golden yellow shades. The best twelve spikes were staged by Sir William Lawrence, Bt., who included Flaming Sword, Labor, Cashmir White, Romola and Imperator; while Mr. B. R. Long was second with T. B. Dumas, Zulu, Antares, Rosa Bonheur and other valuable Irises.

There were many exhibits of six Bearded Irises, and the best were shown by the Rev. Rollo Meyer, Watton Rectory, Hertford, who displayed Brilliant, Amber, Crusader and Duke of Bedford, of fine quality. Mr. T. A. Bliss, Tamar View, Gulworthy, Tavistock, was second, and he had excellent vases of Citronella, Tessa and Monica. In his first prize exhibit of three spikes of any Bearded variety, Mr. Pilkington showed Bruno, metallic bronzy-crimson standards and velvety plum-coloured falls with paler margins; and Mrs. Fitz Hugh, Hewitts, Willesborough, Kent, was second, with a handsome, unnamed variety, of sky blue colour. Mr. B. R. Long was awarded an extra prize for M. Cornuault, a lovely flower with semi-transparent, bronzy standards and plum-coloured falls.

In the class for three spikes each of three Irises, other than Bearded varieties, Mrs. Fitz Hugh was a good first. Her Irises were apparently varieties of I. sibirica, I. bracteata and I. Forrestii. Sir William Lawrence, Bt., was second with vases of I. gracilipes, I. versicolor and a white I. sibirica. The Rev. Rollo Meyer was first in the class for six spikes of Bearded Irises in not fewer than three varieties, and he included very good spikes of Crusader, Duke of Bedford and Alcazar. Mr. F. Wynn Hellings, Kingston Hill, Surrey, was second, and his best blooms were of Isoline and Imperator. The variety Blue Chintz, shown by Mr. Frank Burton, Roughetts, Hildenborough, Kent, was placed first in the class for three spikes of any one Bearded variety, and Ambassadeur, shown by Mr. F. Wynn Hellings, was the second best.

In the next class, which was for six vases of Iris sibirica, in not fewer than three varieties, Mr. C. W. Christie-Miller, The Deanery, Sonning, Berkshire, won the first prize with an I. sibirica Halycon seedling, I. sibirica × orientalis, I. orientalis and its varieties Snow Queen and Emperor, and Iris sibirica Halcyon. Mr. G. Yeld was second with Iris sibirica varieties Snow Queen, Distinction, Perry's Blue, Thelma Perry, Emperor, and a pale lavender-blue seedling.

Major G. Churcher, Beckworth, Lindfield, Sussex, showed the best collection of six bulbous Irises. The varieties which he staged were Autchenburg, cream and orange; Rembrandt, purple, blue and orange; White Excelsior, Van Everdingen, Imperator and Yellow Queen. Mr. R. E. S. Spender, Bagley Wood, Oxford, was awarded the second prize.

Sir William Lawrence, Bt., was placed first in the section for collections of species and varieties other than Bearded Flag Irises, but the number of entries was very limited. He showed forms of Iris californica, I. gracilipes, I. graminea and I. sibirica; Mrs. M. S. Fitz-Hugh, who won the second award, showed fine colour forms of the lovely Iris californica.

Groups.

These formed the chief attraction of the show, and many of them were exceedingly fine, of broad dimensions and with blooms, in most instances of fine quality. With such a number to choose from it was extremely difficult to decide which were the most meritorious, but Messrs. Barr and Sons were undoubtedly the exhibitors of one of the most striking groups. Taste and skill were displayed in the arrangement of their bank of Irises, and the black velvet background, together with the Ferns and various Japanese Maples, combined with the flowers to produce a charming display. At the back were masses of Monsignor, rich purple with velvety falls; Madame Chobaut, pale alizarine-pink on cream, with creamy-white falls; Damozel, rich rose-lavender with margined and flecked white falls; Gagus, creamy-white and red; and Deuil de Valery Mayet, with standards of pale, glowing orange-purple and deep velvety-crimson falls. Porcelain was a striking sort, as also were Belle Hortense, rose-purple and white; Princess Victoria Louise, Albert Victor, Her Majesty, pale purplish-rose, with deep rose, dark-veined falls; Parc de Neuilly, royal purple; and Darius. Other good varieties which were shown well included the pale rose-lavender Rhoda, Prosper Laugier, Minnehaha, a fine pale primrose sort with crimson veined falls; Porsenna, Mrs. Neubronner, and Loreley, also Dalmarius, Nibelungen, with smoky, biscuit-coloured standards and velvety plum-red falls; Florence Wells and Steepway.

Messrs. G. Bunyard and Co. arranged an extremely attractive group and used such varieties as Ambassadeur, Quaker Lady, a smoky bronze variety with purplish falls; Tamar and Tamerlane to good effect. There were fine examples of Sirius, rich purplish-blue with deep velvety falls; Vanessa, Corrida, the pale lavender Mdlle. Schwartze, Crusader and Marjorie Tinley.

An attractive exhibit was very tastefully arranged by Messrs. Amos Perry. At the summit of the bank were fine clumps of Harpalion, Abenda, Odesus, Mrs. H. F. Bowles, Mrs. Marian Cran, Pegasus and Duke of York. There were also several fine unnamed seedlings, and good flowers of such charming sorts as the delicate Mary Gibson; the large-flowered Sensation; Batulus, rose-purple; May Sadler, plum-purple; the bluish-purple Miss Jessop, E. A. Bowles, Mrs. Hetty Matson, Olympus and Wayland Cowley, a beautiful variety with rose-purple standards, deeper coloured falls and an orange beard. A feature of this collection was the hybrids of such species as I. tenax, I. chrysographes, I. Forrestii and I. sibirica. The small, primrose-coloured I. Forrestii minor was noteworthy, and there were examples of I. chrysowegii (chrysographes × Hartwegii), I. chrysogana (chrysographes × Bulleyana) purpurea, I. chrysobirica Gloriosa, and a number of I. chrysofor (chrysographes × Forrestii) seedlings.

Messrs. R. Wallace and Co., Ltd., employed Ferns and Maple foliage to set off the beauty of the numerous varieties included in their exhibit. Among these, mention should be made of Souvenir de Madame Gaudichau, Afterglow and Blue Bird; while besides numerous seedlings as yet unnamed, there were large groups of Nemoralia, Hora and the well-known Gracchus.

A small collection was set up by Messrs. Lane and Gibson, the centre being composed of vases of I. sibirica Nora Diotin, purple, with lilac-purple falls flaked with white; and Perry's Blue; there was also a good I. sibirica seedling. Among the Bearded sorts the most noticeable were Blue Bird, Romany, Clematis, Knysna, gold with purplish-crimson falls; Lent. A. Williamson, extremely handsome, with large pale purple standards and glowing rose-purple falls; Crusader and Quaker Lady.

Mr. Gavin Jones also staged a small group, the most striking sorts being Prosper Laugier, Empress of India and Alcazar, which were given most prominence. The orange-gold Mrs. Neubronner attracted considerable attention, as also did Opera, while other choice varieties were Prince of Orange, Tamerlane, Ambigu, flavescens, and Princess Victoria, a striking flower with primrose standards and purplish-red falls, margined with cream.

Another small collection of choice varieties was staged by Mrs. W. R. Dykes, the most striking blooms being those of Quaker Lady: Cupavo, with giant rose-lilac flowers, and deeper velvety falls; Akbor, Rhadi and Aphrodite, glowing deep rose. We also noticed Araminta, white, with purple and white falls; Peerless, the lovely Amber, pallida odoratissima, Fro, and a beautiful, palest lavender seedling.

Mr. Herbert G. Longford showed bulbous Irises such as the golden Mouche d'Or, Blondin, Flora, pale lavender and cream; Queen Wilhelmina, white; Longfellow, Imperator and Hart Nibbric.

A fine group of specimen blooms, of first-class quality, was shown by the Rev. Rollo Meyer (gr. Mr. J. P. Izzard), Watton Rectory, Hertford. Among the choicest varieties in this collection were Duke of Bedford, with large, scented blooms, bronzy-violet blue, with dark violet falls; Iris King, pale bronze with purplish-crimson falls; Edouard Michel, rich rose-purple; Dream, rosy-lilac; and Mdlle. Schwartze. There were also good spikes of Alcazar, Souvenir de Madame Gaudichau, Albert Victor and Harmony.

Messrs. John Waterer, Sons and Crisp, Ltd., also arranged a magnificent bank of blooms. In the centre was a large group of Ambassadeur, very striking, and at the front, numerous spikes of the new seedling John Waterer. There were large clumps of the magnificent Asia, with silvery-lavender standards and rose-purple falls; Rhein Nixe, Corrida and Fro; while at the back were several forms of Iris sibirica, such as coerulea, Snow Queen, Perry's Blue, and the large, velvety-purple Emperor. Other sorts which made special appeal in this collection were Ballerine, Afterglow, Furstin Lonyay, Mrs. Boyer and Flaming Sword; while at the front of the group were vases of Prosper Laugier, Trianon, Eldorado, Mrs. Reuthe, Cordelia and Turso.

Mr. G. **Reuthe** covered a large space of tabling with an extensive number of varieties. In the centre there were specimen blooms of Asia, Trojana, Queen Katerina, a lovely pale lavender sort with a rich orange beard; flavescens, pallida dalmatica, Ann Page, a fine lavender-purple variety, and the ever popular Alcazar. He also staged such varieties as Mrs. Darwin, Opera, White Queen, Dalila, Trianon and Mrs. Reuthe, and fine blooms of the striking Lord of June, and Souvenir de Madame Gaudichau, with rich, deep bluish-purple standards and royal purple falls.

Next to the above group was one arranged by Messrs. D. **Stewart and Son**, consisting of Dutch and Spanish bulbous Irises. Of the former class there were D. Haring and Imperator in fine condition, and among the Spanish Irises were large vases of Mozart, lavender and cream; Leander, rich gold, marked with orange; British Queen, creamy-white marked orange; King of Blues, Queen of Whites and Hercules, a distinct and striking variety.

Another extensive collection was arranged by Mr. G. G. **Whitelegg**, but, unfortunately, many of the lovely Irises which he staged were seedlings which have yet to be named. Along the centre of this group were baskets of Ann Page, Alcazar, and most prominent of all the lovely Lord of June; while other notable sorts were Jeanne d'Arc, Mrs. G. G. Whitelegg, Loreley, Ma Mie and Amber, a really handsome variety with deep yellow, golden bearded flowers.

The **Orpington Nurseries** were responsible for a grand display of magnificent blooms, which included many choice varieties. Among those which appealed to us especially were Iris King, with smoky-gold standards and velvety, plum purple falls; Rialgar, golden, with the falls veined and shaded with purplish-red; Duchess Sarah, bluish-purple with deeper falls, and Palaurea. Majestic was shown in very fine condition, and there were good examples of Evadne, glowing pale plum-red; Dalila, the brilliant Eldorado, Gabriel, lavender, with lavender-violet falls; Gold Imperial, rich yellow with a prominent golden beard; Taj Mahal, white; Tenebrai, purple, with dark velvety falls; Imperator, bright reddish-purple with royal purple falls, and Flaming Sword. Steepway, of a glowing pale plum colour, with falls covered with a purplish sheen, and Ann Page were also very striking; and there were sprays of the large primrose W. R. Dykes, but their beauty was spoiled by the flecks of purple on the falls.

Mr. W. J. **Caparne**, Guernsey, exhibited a large collection of his paintings of Iris varieties, and the Royal Horticultural Society had a series of artistic renderings of various Irises to demonstrate the Iris Classification which appeared in the Society's *Journal*, Vol. LIII, Part 1.

DUBLIN NATURALISTS'.

The members of the Dublin Naturalists' Field Club recently visited the National Botanic Garden at Glasnevin, and were conducted around by Mr. J. W. Besant, the Curator. For such an excursion the day was ideal, and the atmosphere was heavily laden with the rich perfume of Wallflowers and Lilac.

These gardens, some fifty-one acres in extent, were founded in 1794 by the Royal Dublin Society, and are aptly termed "A gem amongst European Botanic Gardens," being considered unique for natural beauty, comprehensiveness of the various collections, and compactness of arrangement.

In the early stages, the garden was divided into sections: Orchard, Hay Garden, Dyer's Garden, Cattle Garden, Irish Garden, Esculent Garden and Linnean Garden, but about the year 1830 vast changes were made and many improvements effected. These divisions were abolished and the decorative side developed. With the changes, which practically meant the remodelling of the entire garden, will always be associated the names of Dr. David and Sir Frederick Moore. Under their guidance a garden was made for the Irish nation as beautiful and with a collection as comprehensive as any, and better than most, in Europe.

At present the rock garden is one of the principal features, for Aethionemas in variety make an attractive display, and Cytisuses and Celmisias are very fine. Other plants which attracted attention included Incarvillea grandiflora, Pentstemon Menziesii var. Scouleri, Meconopsis Baileyi and a colony of Kurume Azaleas. In the bog garden, drifts of Primulas were at their best, particularly P. pulverulenta and P. japonica rosea. P. Florindae was not, as yet, in flower. Other interesting plants noted about this section were a magnificent specimen of Copper Beech, Taxodium distichum, Salix magnifica, Cedrus Libani—a perfect "table-top" specimen is to be seen in the Convent grounds adjoining—Ginkgo biloba and Cercidophyllum japonicum. By a strange coincidence, the last two were planted side by side, and it has since been suggested that the latter was originally sent home in error as the Maidenhair Tree. A nice little colony of Pinguicula is naturalised by the side of the lake.

In the glasshouses there were Hippeastrums (from the Westonbirt collection) to be seen. Senecio Cambridge Beauty and Cineraria pendula grouped together were quite effective, and many Orchids of interest were in flower, Cattleya citrina being perfectly developed and sweetly scented. Passing through the Temperate House, the Cape Silver Tree, Leucadendron argenteum, was especially conspicuous, and the Stove contained on one side plants of high decorative value, and on the other those used in the preparation of food and medicines, etc.

On the way to the Succulents, the Filmy Fern House was visited and much admired; specimens of Trichomanes and Todea were in excellent condition, and a good collection of Liverworts was also noticed.

Most interesting at the present time is the Water House, where the Victoria regia has already several well-developed leaves and is showing a flower bud. In this large central tank are also some Lotus plants and the Sacred Bean, Nelumbium. Side tanks contain smaller species of Lilies and specimens of Papyrus, Musa, Sugar and Rice in pots, while the pillars are furnished with Cucumbers, Melons and Gourds. A collection of Cannas and Caladiums is also included here.

The visit concluded with a visit to the alpine yard and propagating pits, where particular interest was taken in Nepenthes Rajah, the Venus' Fly Trap, Dionaea, and a collection of Sempervivums got together by Dr. R. Lloyd-Praeger. The party expressed sincere gratitude to Mr. Besant for the manner in which the excursion was conducted.

WAKEFIELD AND NORTH OF ENGLAND TULIP.

The ninety-second show of the above Society was, as a whole, a praiseworthy display, having in mind the fact that this Tulip growing season has been one of the worst on record.

The show was formally opened by Mr. B. Watmough, of Wakefield, on behalf of Colonel Sir E. A. Brotherton, Bart.

Mr. C. J. Fox, of Moseley, near Birmingham, was the winner of the Silver Challenge Cup for the best stand of nine Tulips, and in addition he also won, with magnificent blooms, the special prizes for the premier breeder and premier flamed Tulips in the show. The special award for the premier feathered exhibit was won by the President, Mr. C. W. **Needham**.

In the open classes, for a collection of nine Tulips consisting of three bizarres, three bybloemens and three roses, each trio comprising one breeder, one flamed and one feathered, Mr. C. J. Fox was placed first with Sam Barlow, Andrew Hunter, Athos, Duchess of Sutherland, Lady C. Grosvenor, Mrs. Collier and Mabel; he was also the first prize winner in the section for six rectified, dissimilar Tulips, with fine examples of Gleam, Sir Joseph Paxton, Bessie, George Edward, Mrs. Collier and Annie McGregor; and was again successful in the class for six breeders, dissimilar, with the varieties Sulphur, Wm. Mellor, Andrew Hunter, Lucy Luard, Annie McGregor and Mary Swan.

For a pair of flamed Tulips, of any class, Mr. S. F. **Richmond** was awarded the first prize; he showed fine blooms of San Barlow and Annie McGregor, and he also gained the premier award in the section for a pair of feathered Tulips with Modesty and Adonis.

In the local classes, Mr. S. F. **Richmond** was placed first for a collection of six rectified, dissimilar Tulips with good examples of William Wilson, Sir Joseph Paxton, Trip to Stockport, Universe and Mabel; and again in the class for six dissimilar breeders, the varieties which he showed being Alfred Lloyd, Bridesmaid, Lucy Luard, Annie McGregor, Rose Hill and a seedling.

Mr. F. Fox was the successful exhibitor in the class for three breeders, dissimilar, his exhibit consisting of Alfred Lloyd, Lucy Luard and Eos; while for three Tulips, comprising one breeder, one feathered and one flamed, all of one colour, the first prize was awarded to Mr. R. **Robinson**, who showed Eos and Modesty.

For bizarre breeders, the first and third prizes were awarded to Mr. S. F. **Richmond**, in both instances for the variety Sulphur; he also gained the first and second prizes for bybloemen breeders, and for rose breeders; the first for flamed bizarres, and the first and fourth for flamed bybloemens.

Mr. **Richmond** was again successful in securing the first and second prizes in the class for flamed roses; the first and third for feathered bizarres; the first and fourth for feathered bybloemens, and the first and second for feathered roses.

In the novice class, for one breeder, one feathered and one flamed, Mr. F. **Tingle** received the first award for blooms of Lucy Luard, Mrs. Collier and Sir Joseph Paxton.

LEEDS PAXTON.

Nearly sixty members of the Leeds Paxton Society, including several ladies, enjoyed the hospitality of Mr. A. Nugent Smyth, of the Wetherby Bulb Farm, at the end of May, and despite the heavy rain, were fully interested in the show of bulbs and flowers.

The party left Leeds by motor and proceeded to Selby, where their host has a farm of several acres devoted to the growing of bulbs. Fortunately, the rain held off while the party were in the open, and although past their prime, the flowers were much admired.

Leaving Selby, they proceeded to Wetherby, where tea was provided by Mr. S. Lumley, and afterwards they made an inspection of Mr. Nugent Smyth's farm and forcing houses at Spofforth Hill.

Mr. Salton presided at the tea, following which Mr. Pragnell proposed a vote of thanks to Mr. Nugent Smyth, to whom and to the members of his staff he extended the appreciation of the Paxton Society for their courtesy and the able manner in which the inspection had been conducted.

Mr. Nugent Smyth, in reply, expressed the pleasure it gave him to receive the members of the Society.

READING AND DISTRICT GARDENERS'.

The first evening meeting of the summer session was held, by the kind permission of Mr. A. C. Bartholomew, M.A. (Oxon.), V.M.H., in his gardens at Tilehurst Road, Reading, on May 30. It proved to be not only an interesting and enjoyable one, but also highly educational, especially to lovers of alpine plants.

Here were to be seen thousands of alpine subjects, collected from all parts of the country, many of which are not in commerce. Under the guidance of Mr. Bartholomew and Mr. C. Cook, gardener, the party made a thorough inspection of the garden.

There were numerous species of Meconopsis, Dianthus, Saxifraga, Cotyledon, Ramondia, Trollius and Veronica, while Helianthemums, Anemones and Erodiums were also plentiful. Mention may be made of some fine specimen shrubs and trees, such as Abelias, Schizandras, Solanums, Eucryphias, Fabianas, Castanopsis, Osmanthus, Magnolias, Halesia tetraptera, Azaleas, Abutilons and many others.

After the ramble, the party was entertained to tea, at the close of which the President, Mr. Frank E. Moring, tendered to Mr. and Miss Bartholomew the sincerest thanks of the members for the kind hospitality shown to them.

BERLIN SPRING SHOW.

The Spring Exhibition of the German Horticultural Society was held this year from May 5 to 13, in the Clou Concert Hall. Novelties were well to the fore, including a new Lilac, Ruhm von Horstenstein, from Messrs. Wilke; two new Hydrangeas from the firm of Graetz, Cologne, named Kölner Jungfrau and Kölner Bauer respectively; and a third Hydrangea, known as Schneekoppe, from Messrs. Brockmann's of Hanover. The Weissensee Cinerarias were on view, but, unfortunately, the poor lighting was unfavourable to the colouring, and the fine plants did not appear to the best advantage. Two new Azaleas were Adolf Grille and Oberbürgermeister Böss, both from the firm of Ambrosius, Weinböhla.

Near the groups of Cacti (which are now an unfailing feature of every German show), some fine Calceolarias and Cattleyas were shown by the firm of Jeidels, Wannsee; Hydrangeas and cut Roses by Noack's, of Mariendorf; and Schizanthuses by V. de Coene, Buchholz. Two new Polyantha Roses, Locarno and Goldlachs, won universal admiration by their wonderful colouring. Sweet Peas were exhibited by the Hanover firm of Steinberg; Messrs. Winter, Mahlow, showed Hippeastrums, which were well up to the usual high standard; and the Dahlem Horticultural College had an exhibit of Strawberries and forced vegetables.

LEICESTERSHIRE AGRICULTURAL.

The Horticultural Exhibition, held in connection with the annual show of the above Society on June 1 and 2, was quite a success, although the exhibits were not so extensive as in former years.

In the competitive classes, Mr. Holmes, Chesterfield, was awarded the first prize for a group of miscellaneous plants; Messrs. W. Artindale and Son received the first award in the section for hardy perennial plants and cut blooms; and Mr. C. Vickers, Leicester, was the premier prize winner in the class of cut Roses.

An Award of Merit was granted to Messrs. G. F. Shoult and Sons, Ltd., for a new Tomato named Blaby, the fruits exhibited having been graded and packed for market.

A new late-blooming Rhododendron named Princess Elizabeth, with fine red blooms, was staged by Messrs. Waterer, Sons and Crisp, Ltd., and there was also a fine exhibit of Rhododendron Prince of Wales, an improved form of Pink Pearl, later flowering and of a deeper pink.

Large Gold Medals were awarded to Messrs. Waterer, Sons and Crisp, Ltd., for Rhododendrons; to Messrs. Allwood Brothers, for Carnations; and to Mr. C. Vickers, for floral designs.

Gold Medals were won by Mr. R. Roger, for an alpine garden; Messrs. Bakers, for alpines and Lupins; Messrs. Daniels Brothers, for Aquilegias, Roses and Schizanthuses; and to Messrs. Ellison for exotic Ferns.

Silver-gilt Medals were awarded to Miss Thompson, for Cacti; Messrs. Hewitt, for Delphiniums; Messrs. Bowell and Skarratt, for alpines and herbaceous plants; and to Messrs. Maxwell and Beale, also for alpines.

Obituary.

Arthur Charlton.—We regret to learn that Mr. Arthur Charlton, senior, of Tunbridge Wells, died on May 26, in his seventy-sixth year. His interest in the Summervale Nurseries continued for about forty years, and in recent times he commenced the nurseries at Rotherfield, Sussex, where he and his sons developed about forty acres of land. During his later years, Mr. Charlton left the principal conduct of the business in the hands of his sons, Mr. Arthur and Mr. John Charlton, and his grandson, Mr. Kenneth Charlton, but right up to the time of his decease his interest in the business was unabated. Mr. Arthur Charlton, senior, was greatly liked, and had a fine reputation for straight dealing and excellent business methods.

ANSWERS TO CORRESPONDENTS.

Araucaria Failing.—*J. T. S.* The condition of your Araucaria shoots suggests that there may be something wrong at the roots. If the natural level of the water in the soil has been raised to such a point as to submerge some of the roots, it is probable that those roots have been killed, or it may be that the ground has been flooded at some time; this would also have an injurious effect upon the roots. At a little distance from the tree dig a hole two or three feet deep and examine the condition of the soil. If waterlogged, lay drain pipes to carry superfluous water away. At any rate it would do good to loosen the surface of the soil beneath the branches and apply a dressing of decayed leaves.

Bearded Irises.—*G. H.* In addition to the varieties named in your letter, the following will prove serviceable: Neptune, Prosper Laugier, Sapphire, Lord of June, Flaming Sword, Imperator, Lent A. Williamson, Iris King, Asia, Knysna, Fro, Alcazar, Duke of Bedford and Souvenir de M. Gaudichau.

Brown Fluid.—*Correspondent*.—The brown fluid appears to be a combined disinfectant and insecticide, but of too dangerous a character to be used as an insecticide because it is likely to cause scorching and defoliation, although as a disinfectant it would be quite useful.

Chrysanthemum Leaf Miner.—*S. H. N. V.* Prevention is better than cure in the case of the leaf-miner on Chrysanthemums; you should therefore spray the plants at frequent intervals with a nicotine or quassia solution, or other specific which will render the leaves distasteful to the fly and so prevent the deposition of eggs.

Cucumbers Diseased.—*A. R. W.* Your Cucumbers are attacked by the Cucumber leaf-blotch fungus, which usually confines its attacks to plants which have been grown too rapidly and have soft foliage. Spraying with sulphide of potassium is said to check the disease, and we would suggest that you try them in a less close and humid atmosphere.

Gardenia Buds Dropping.—*M. L. G.* No doubt the cause of your Gardenia buds dropping is due to the plants being allowed to become too dry at the roots; pay more careful attention to watering.

Insectivorous Plants.—*C. B.* Among the insectivorous plants mentioned, the Darlingtonias may be regarded as the hardiest group. The Dionaea may be kept out-of-doors with the protection of a hand-light or bell-glass, but it is best grown in a cool greenhouse or even a cold frame; even when grown indoors it is best grown under a hand-light. The Sarracenias may be regarded as cool greenhouse plants. They are best grown in a small and low house, where ample ventilation may be given during the summer, and a cool, moist atmosphere maintained; if you could give them head-room, there is no reason why some of them should not be successfully grown in a cold frame. The compost for all the plants mentioned should consist of good fibrous peat and chopped Sphagnum-moss, mixed with sand or broken crocks; free drainage is essential, as when grown in pots they require copious supplies of water at the roots during the growing season.

Melon Leaves Disfigured.—*J. S. B.* We could find no trace of disease in the leaves received, but there were distinct signs of scorching, which may, of course, be due to bursts of sunshine following dull weather.

Names of Plants.—*E. G.* 1, Solanum crispum; 2, Acer palmatum variegatum; 3, Clianthus puniceus; 4, Acer palmatum atropurpureum; 5, A. palmatum dissectum. *L. S. A.* 1, Probably Boraga officinalis; 2, Cotoneaster ovalifolia; 3, Thalictrum adiantifolium. *J. H. B.* 1, Zelkova crenata; 2, Tsuga Pattoniana; 3, Pseudotsuga Douglasii var. glauca; 4, Abies nobilis var. glauca; 5, Cryptomeria japonica; 6, Thuya orientalis var. aurea; 7, Cupressus thuioides var. variegata; 8, Juniperus communis; 9, Cryptomeria japonica var. araucarioides; 10, Pieris japonica; 11, Juniperus communis var. fastigiata; 12, Cupressus obtusa var. filifera; 13, Picea orientalis.

Peach Leaves Falling.—*W. P.* Your trees are apparently suffering from an attack of the shot-hole fungus, the cure for which is to spray the trees at frequent intervals with an ammoniacal solution of copper carbonate.

Tomato Plants Diseased.—*F. N.* Your Tomato plants are attacked by stripe disease. Plants growing rapidly are very susceptible to this disease, which may be contracted either from the soil or from the seeds. Plants may be induced to develop healthy tops by repeated dressings of sulphate of potash. One-eighth-of-an-ounce is sufficient for a 12-inch pot, and should be spread over the surface prior to watering. Two or three dressings may be necessary, and should be followed by a dressing of dried blood to stimulate vegetative growth. When feeding the new crop the nitrogen supply should be cut down to a minimum, and a good deal of potash should be given to maintain hard mature growth, which is resistant to stripe disease.

Tulips Collapsing.—*W. S. F.* The Tulip, bulbs you sent are attacked by what is known as the "fire" disease, *i.e.*, Botrytis Tulipae, a disease which has become a serious menace during recent years and which often occurs after spells of cold weather. The measures which should be adopted for its control are: 1, when buying bulbs, carefully examine them for the presence of spores, *i.e.*, small black spots around the necks, and reject any that are infected; 2, should the disease appear, as in this instance, lift the bulbs at once and burn all the infected plants, taking care to remove and burn also the soil around them. Prompt action will check the spread of the disease and prevent the infection of the soil. We are afraid that there is no known cure for this disease when once the bulbs are attacked.

Yellow Wild Flower in a Wood.—*A. A.* The plant is Barbarea vulgaris, variety campestris of Fries, the common form of the Winter Cress. You will not make much progress in determining this or any other of the Cruciferae (four-petalled flowers like Wallflower), unless you gather them in fruit. The pods are very important in determining the species of Barbarea, and all the other members of the family. If you do not happen to know the name of the genus you will have to take the embryo out of the seed to see how it is folded. This is easy to do with a needle and fresh seeds. For museum purposes you will have to obtain specimens with fully grown pods. The plant is frequent on the banks of rivers, streams and other wet places, and there you can always secure root leaves, where the plant is not smothered in grass. The flowers are of secondary importance, except in the case of B. stricta, which has hairs on the tips of the sepals, these being an infallible guide to that species.

Communications Received.—V. T. G. C. (Thanks for 2/3 for R.G.O.F. Box.).—J. C.—K. Y.—A. M.—S. A.—B. S.—A. S.—W. H. M.—F. F.—J. B.—G. B.—R. F. G.—E. H.—E. E. T.—A. F.—R. W. T.—A. C. B.

GARDENING APPOINTMENTS.

Mr. F. A. Bush, lately Gardener and Orchid Grower to E. Sinclair, Esq., Chislehurst, Kent, and previously with Sir Arthur Watson, C.B.E., as Gardener and Orchid Grower to R. Brooman White, Esq., Arddarroch, Garelochhead, Dumbartonshire. (Thanks for 2/- for R.G.O.F. Box.—Eds.).

Mr. Geo. F. Hallett, for the past sixteen years Gardener to Sir Richard Graham, Bt., Netherley, Cumberland, and previously Gardener to Sir Thomas Heskett, Bt., at Easton Neston, Northamptonshire, as Gardener to the Rt. Hon. The Viscount Dunsford, Eastwell Park, Ashford, Kent.

Mr. A. Matthews, for the past two years at Deans Green, Lymm, Cheshire, as Gardener to Mrs. J. Reid-Walker, Ruckley Grange, Shifnal, Shropshire. (Thanks for 2/6 for R.G.O.F. Box.—Eds.).

THE
Gardeners' Chronicle

No. 2165.—*SATURDAY, JUNE* 23, 1928.

CONTENTS.

Alpine garden—
  Antirrhinum sempervirens ... 449
  Arenaria montana grandiflora ... 449
  Cortusa Matthioli ... 449
  Potentilla Tonguei 449
Ashridge Park, Hertfordshire 444
Ayrshire Potato sales 445
Book, notice of—
  Hardy Evergreens... 455
Box 448
Fertilisers for lawns, experiments with ... 444
Flower garden—
  Wallflowers 448
Frost damage in north Germany 444
Fruit register—
  Strawberry Fillbasket 455
"Gardeners' Chronicle" seventy-five years ago 445
Holland House Gardens 444
Ideal gardens and plant lore 452
Indoor plants—
  Haemanthuses ... 448
Kew, notes from ... 453
Legacies to Gardeners 444
Liability of property owners for injuries to persons present by permission 452
Lime requirement ... 443
Lindley Library, additions to 455
Obituary—
  Tucker, Mr. Wm. Duncan 460
Primula, the genus ... 454
Rose Show, the Great Summer 444
Shrubs in a West Somerset garden, the effect of the past winter on 453
Societies—
  British Florists' Federation 460
  Glasgow and West of Scotland ... 460
  Guildford and District Gardeners'... 460
  Marlow and District Chrysanthemum 457
  Royal Horticultural 457
  Société Nationale d'Horticulture de France 456
  York Gala 459
St. Anne's Hill, Chertsey 444
Trees and shrubs—
  Coriaria japonica ... 448
  Lonicera Ledebourii 448
Vegetable garden—
  Autumn and winter salads 455
Vienna, novel street trees in 444
Violas, a revision of ... 454
Ward, Mr. F. Kingdon: tenth expedition in Asia 450
Week's work, the ... 446
Wolstenholme, Mr. T. E. 444

ILLUSTRATIONS.

Adiantum flabellatum 447
Antirrhinum sempervirens 449
Iris Romance 445
Ward's, Mr. Kingdon: tenth expedition in Asia 450, 451
Wolstenholme, Mr. T. E.... 444

AVERAGE MEAN TEMPERATURE for the ensuing week deduced from observations during the last fifty years at Greenwich, 61·2°.

ACTUAL TEMPERATURE.—*The Gardeners' Chronicle* Office, 5, Tavistock Street, Covent Garden, London, Wednesday, June 20, 10 a.m. Bar. 30. Temp. 60°. Weather, Fine.

Lime Requirement.

EVERY cultivator is familiar with the appearance of soil that has become sour; it has an unkindly look, refuses to give a crumbly tilth, and certain weeds, such as Spurrey, Sorrel and May-weed, are seen to flourish; the crop, if any, is poor; all the members of the Brassicae family are likely to develop club root, or finger-and-toe (as the farmer and gardener term it); and the Beet crop may fail altogether. The remedy is, of course, lime—either well-slaked burnt lime, or lime in the form of chalk or limestone, *i.e.*, carbonate of lime. But before the soil has reached an actively sour state, a dressing of lime is valuable. That lime and high fertility go together is an age-long tradition embodied in the proverbial wisdom of the countryside. It is an ancient maxim, for example, that heavy manuring should be accompanied by the application of lime. Our ancestors gave special merit to marl—a characteristic limy clay, often found in natural deposits of some extent, and it is interesting to note that the Roman historian, Pliny, states that the inhabitants of Gaul and Britain practised the marling of their land extensively. Many readers will remember that Kipling makes the bailiff "Hobden" say to his master, regarding a certain Sussex field:

> "If you want to change her nature
> You have got to give her lime."

Now there is little difficulty in recognising sourness in land when the condition is pronounced, but it is useful to be able to identify early stages of lime deficiency, and to do that it has hitherto been necessary to call the chemist to our aid. But it so happens that comparatively recently chemists have devised a satisfactory test for sourness which anyone may use. The sour soil is, of course, an acid soil, and, at first sight, it would seem to be easy to measure the acidity or alkalinity of a soil. Unfortunately, a complication is introduced by the fact that acidity is difficult to define absolutely; the condition, and its reverse—alkalinity, are relative to diverse chemical surroundings, so that one test, such as the familiar blue and red reactions of litmus, may give a different result from another if the environmental conditions are altered. Chemists, however, have now agreed that one test in particular shall be regarded as standard, and that is the electrical one, dependent on the measurement of the hydrogen ion concentration, a factor directly correlated with the reaction of a liquid such as the soil solution, and capable of being measured numerically. The symbol used is a figure preceded by the letters "pH." For example, pH.7 expresses neutrality; pH.5, 4, or below, is a graduated measure of the degree of acidity, and the figures above 7, of alkalinity. Rigorously used, the test measures the electrical conductivity of the soil solution, and the direct determination of the figure demands the use of electrical apparatus of a somewhat complex description. Fortunately, it has been found that certain dye substances give a range of colours which follow a regular sequence corresponding to changes in the pH figure, so that standard solutions may be made up, each corresponding to a definite pH number. For the purpose of testing a soil for acidity by this method, a convenient outfit, made up in a carton, is supplied by the well-known firm of British Drug Houses, Ltd., and any unskilled person may use the test. The package contains a bottle of the colour reagent and a small double porcelain boat. A small sample of the soil to be tested is placed in one compartment of the boat and moistened with the dye solution; on tilting the boat the liquid drains off into the second compartment where its colour can be estimated. Thus, if the colour is light red the soil is strongly acid, but if blue, strongly alkaline, and intermediate colours correspond to definite pH. figures. The test does not occupy more than five minutes of time and provides a means by which a cultivator can determine whether his soil has reached a condition when it needs an application of lime. There is, however, no known method of estimating from the colour reaction accurately how much lime should be applied, as a minimum, but fortunately it is not easy to overdo a dose of lime, so that on seeing the red colour one cannot go wrong in applying at least ten hundredweights of carbonate of lime per acre as a start. If the reaction colour is still red, or yellow, a further ten hundredweights may be applied. The addition of lime to a soil not only removes acidity; it supplies an essential plant food; further, the addition of lime to a soil improves the tilth, and, it is believed, favours the action of those soil organisms whose business it is to bring about the decay of organic matter. Again, calcium is a potent ingredient of what is now termed the "colloid complex" of a soil. In a fertile soil there is a critical condition of balance of various substances, such as potassium, calcium, magnesium and so on, and a soil only becomes sour when the calcium in the complex is replaced by the acid-determining radicle, hydrogen. Calcium, therefore, fits its popular description as a "sweetener" of the soil. Its value in garden work is to act as a corrective of the ill-effects which are bound to follow heavy dressings of organic manures, and every good gardener knows that periodical applications of lime should be given to all land under intensive treatment. What he wants to know is when the last dressing has become exhausted. It may be asked why the practice of liming the land seems to have fallen into desuetude. One reason undoubtedly is that when Lawes made his famous discovery of the virtues of applications of "minerals" to cultivated land, he omitted to lay any stress upon the important function of the mineral calcium in the soil. It so happens, as Lawes has recorded, that his predecessors had limed the Rothamsted soil very fully, for on testing the soil of the famous Broadbalk field it was found that it contained the equivalent of one hundred cart-loads of chalk per acre. It followed that in planning the classic experiments on this field it was not possible to provide a "no-lime" plot. Undoubtedly, if there had been such a plot, it would by this time have shown the need for lime; for on that portion of the farm in which permanent grass has been given intensive treatment with certain fertilisers for upwards of seventy years, the soil is now remarkably acid. Hence, it may well be that during the last half century, when many experiments on the model of Rothamsted have been laid down all over the country by education authorities, no one thought it necessary to make any experiments on the use of lime. The other reasons for this failure on the part of experts to give much attention to the question of liming, may be found in the following facts:—It is well-known that the Potato crop, on the whole, likes a slightly acid soil, for if lime is present there is often a tendency for the disease known as "Common Scab" to appear. Again, the Oat crop is untroubled by the absence of lime, and it now appears that in certain soils particularly in Wales and Scotland, chemical acidity may be present without causing any serious harm. Another factor which has some influence in making cultivators sparing in the use of lime is the fact that it is now both difficult to obtain and costly to apply. The days in which a farmer, as a routine practice, would apply twenty to thirty cart-loads of chalk to the acre, are gone, for at the labour cost nowadays, such treatment is prohibitive. The only fact which possibly modifies the situation is that if lime or chalk can be applied as a fine dry powder, a smaller quantity may be used with good effects, and in recent years it has been found that finely ground limestone rock is an efficient substitute for the more active forms, such as burnt lime. We think that all cultivators should, as a routine practice, test the reaction of their soils, not in any one field or plot only, but in every section of the farm or garden in which a separate crop is grown. The only special outfit for the purpose on the market is the one mentioned above, but there are many simple chemical means available, the use of which may be easily learned. In the Netherlands there is in vogue a test known there practically to every farmer as the "Comber" test, after the name of its discoverer—the eminent Professor of Agricultural Chemistry in the University of Leeds.

It consists of an alcoholic solution of potassium thiocyanate which is colourless to neutral, but red to acid conditions. But anyone who finds " messing " with chemicals irksome may always send a sample of his soil to the local agricultural organiser, who can not only test the reaction of the soil but also, on the basis of his local knowledge, prescribe the amount of the lime dressing needful.

The Great Summer Rose Show.—The National Rose Society's great summer Rose show will be held this year in the grounds of the Royal Hospital, Chelsea, S.W., on Friday and Saturday, June 29 and 30. The most popular features of the exhibition will be the new seedling Roses exhibited for the first time, and the large groups of Roses. In all classes the competition promises to be very keen, and many entries have been received.

Holland House Gardens.—The beautiful private gardens at Holland House, Kensington, will be open to the public on Saturdays, June 30 and July 7 and 14, by permission of Mary, Countess of Ilchester, in aid of the West London Hospital and the Crippled Boys' Home. The charge for admission will be 1s.

Novel Street Trees in Vienna.—The municipal authorities in Vienna are making an interesting horticultural experiment. They have railed off a portion of a very wide street behind the Bourse, and planted this piece of ground, which is one hundred yards long by about three yards wide, down one side with standard Japanese Cherries, and the other side with standard Rhododendrons. Each Cherry stem is clothed with a climbing Rose, which flings its blossoms far up into the crown of the tree. The experiment is an interesting one, as it will show whether or not these beautiful trees and shrubs will withstand the grilling heat and choking dust of the Vienna streets in the summer.

Legacies to Gardeners.—The late George John Shaw-Lefevre, first Baron Eversley, of Abbotsworthy House, Kings Worthy, Winchester, who died on April 19, left £200 to Mr. William Miller, his gardener; £60 to Mr. Ernest Young, and £50 each to Mr. Fred Simmons and Mr. George Gregory, gardeners.

Choice Fruits by Post.—At this period of the year considerable quantities of Strawberries and other soft fruits are sent through the post, and many of the packages are found in the course of conveyance to be inadequately packed, with the result that not only are the fruits damaged, but damage is done to the contents of other parcels, and for this the sender of the fruits is liable. The Postmaster-General considers it necessary therefore to draw the attention of the public to the method of packing which has been found by experience to afford the best protection. The packing must be such that the juice cannot exude, therefore a metal box with a tightly fitting lid, and securely tied with string crossing the lid in both directions, should be used. It is announced that no parcel will be accepted which contains soft fruits packed in a chip or wicker basket, or in a cardboard box, or in a tin box with a lid that does not fit tightly. Parcels of fruits should be conspicuously marked " Fruits, with care."

Theophrastus: *De Causis Plantarum.*—The well-known translation of the *Historia Plantarum* by Sir Arthur Hort has emphasised the lack of a similar account of *De Causis Plantarum.* This deficiency has now been met by the appearance of an English translation of Book I, by Dr. Robert E. Dengler, of the Pennsylvania State College, State College, Pennsylvania, U.S.A. In addition to the translation, the volume contains a revised Greek text, critical apparatus and commentary. In his preface the author states: " It is hoped that this first presentation of part of *De Causis Plantarum* in a modern vernacular may help to enlarge the acquaintance with and the admiration for one of the finest figures in the history of Natural Science—a man who was no mean figure even by the side of the great Aristotle, his colleague—one whose observation and insight well earned for him the name of Father of Botany, and whose message, though couched in an elusive and condensed manner scarcely deserving the term style, yet justifies the myth about the changing of his name to Theophrastus." Copies of the translation may be obtained from the author for the price of $3.

Mr. T. E. Wolstenholme.—The extremely able and popular Secretary of the Southport Show is a native of the town for which he acts as Publicity and Attractions Manager. For several years he occupied positions with the Lancashire and Yorkshire Railway Company, and the experience and training thus gained has proved invaluable. His first connection with the Southport Corporation was as assistant in the Clerk's Department, at a time when the value of advertising Southport as a holiday and health resort was first recognised. In connection with this development, Mr. Wolstenholme took a prominent part, especially in dealing with railway companies. Eventually Mr. Wolstenholme's work became so important that in 1922 the Corporation decided to form a Publicity and Attractions Department, with Mr. Wolstenholme as Manager. He organised the Official Information Bureau, which has proved of inestimable value to visitors. He is also responsible for the *Official Guide*, entitled " Sunny Southport, England's Seaside Garden City "; this contains many illustrations in black and white and about a dozen in colour. The year following his appointment as Publicity Manager, Mr. Wolstenholme prepared reports and recommended the establishment of an annual flower show as one of the great attractions of the town. This entailed a vast amount of work and a good deal of travelling, as all the leading exhibitions in the country were visited. In due course, the recommendation was adopted and the first great exhibition, held in 1924, fully demonstrated the wisdom of the recommendation, while subsequent exhibitions have increased in attractiveness and paid for themselves. Mr. Wolstenholme is a tireless person, a man of vision, infinitely patient, and the possessor of that desirable faculty that enables him—apparently without effort—to inspire confidence in all with whom he has to deal. Mr. Wolstenholme is an ideal Show Secretary; most flower show secretaries have had previous training and have grown up with the exhibitions they handle, but Mr. Wolstenholme began " right away " with one of the biggest horticultural events in the British Isles, and his pluck, enthusiasm and business training have enabled him to make the event an annual and unqualified success.

MR. T. E. WOLSTENHOLME.

St. Anne's Hill, Chertsey.—On Wednesday, June 13, Sir William Berry's gift of twenty-three acres on the summit of St. Anne's Hill, one of the most attractive spots in the Home Counties, was formally handed over to the town of Chertsey. There was a distinguished company present, which included Mr. Chamberlain, the Minister of Health. Lady Berry was presented with a gold key of the gate leading to the hill, and after a tour of inspection, the company assembled in the dingle, where Sir William Berry handed over the deeds of the property to Colonel Clare, Chairman of the Chertsey Council. Since Sir William purchased the property last autumn, considerable improvements have been carried out. Woodland walks have been formed by the removal of trees here and there, and others have been felled to form view points, from which miles of the surrounding country may be scanned.

Experiments with Fertilisers for Lawns.—Owing to the demand for information on this subject, the Staffordshire County Education Committee have been carrying out a number of experiments in the various public parks in the county with various artificial manures, and the results so far obtained are very satisfactory, for there are striking differences between the various treatments, but it is too early yet to state which manures are the most economical to use on the various types of soil. The work is being done in conjunction with the county Parks Committee, and the most extensive experiment is that arranged in the Walsall Arboretum, where twelve plots of lawn are under treatment. These experiments have already created considerable public interest, and we learn that the Superintendent of the Walsall Arboretum has at times been inundated with enquiries.

Ashridge Park.—The mansion of Ashridge, Hertfordshire, has been purchased for the use of the Conservative party as an educational centre; but considerable portions of the park and grounds have been acquired in the last few years by the National Trust, and in the course of the recent break-up of the estate the Trust has brought its total holding to 2,200 acres. By the negotiations just completed, the Trust will hold for the public Sallow Copse, Old Copse, and the rest of Aldbury Common, some 275 acres, on the escarpment above Aldbury village, and a further stretch of 300 acres of the park, including Thunderdell Lodge, Princes Riding, a fine avenue of Beech and Oak, and Hardinge Rookery. A new golf course, which it is intended to lay out in the park, will be held on lease from the Trust.

Prize for a Rabbit Trap.—In view of the great damage done in gardens by the depredations of rabbits, it is interesting to learn that the Council of the Royal Society for the Prevention of Cruelty to Animals, in conjunction with the S.P.C.A. branches of Edinburgh, Glasgow and Aberdeen, are to offer a prize of £300, for the best rabbit trap calculated to supersede the cruel, steel-toothed trap at present in general use. The trap should be simple, portable, safe to use, inexpensive, easy of manipulation, effectual without bait, and humane by killing outright; at the same time it must be small enough to be placed in rabbit holes. Traps will be received for competition and trial between September 1 and November 1, 1928. The address of the R.S.P.C.A. is 105, Jermyn Street, London, S.W.1.

Frost Damage in North Germany.—During the night of June 1 and 2, a heavy frost occurred in the Hamburg district which did extensive damage to growing crops, early Potatos, Strawberries and Tomatos being the main victims. Frost not being anticipated so late in the season, all the protective material had been removed, and by the early hours of the morning of the 2nd the foliage of the Potatos was found to have turned black, while Tomatos, which had been planted out only a few days previously, were completely destroyed. Strawberries were then in full flower, and it is not yet possible to say what the exact damage will be, but it is estimated at not less than a million marks. In some parts of the district, notably at Hellbrook, where Brassicas are chiefly grown, practically no harm was done, but the smallholders not far away suffered very severely.

Ayrshire Potato Sales.—The annual auction sales of early Potato (growing) crops in South Ayrshire were commenced in the Girvan district on May 12, and were continued during the present week. Epicure is the only variety grown, and the tubers, having benefited considerably by recent rains, give promise of a satisfactory yield. There was a big attendance of buyers and bidding was fairly active, especially for the lots that were in a more advanced state of maturity. Prices were irregular, and in some cases disappointing. So far, the top figure realised is £68 per acre and the lowest £29, while the average price obtained on the individual farms ranged from £33 9s. 0d. per acre to £47 9s. 0d. The price of the new crop at the end of the week was about £12 to £13 per ton, a low figure for the season of the year, and as the present yield does not exceed four to five tons per acre, the transactions do not seem remunerative from the merchant's point of view.

Autumn Exhibition in Utrecht.—From October 3 to 6 next, a great national horticultural exhibition is to be held at Utrecht, Holland, to mark the occasion of the opening of the new hall for the sale of fruits and vegetables. Fruits will be an outstanding feature of the exhibition, and especial attention is to be paid to the subject of packing; vegetables will also be shown, and flowers, including, of course, Dahlias and Chrysanthemums.

American Delphinium Society.—The formation of this Society has recently been announced, and we learn that the first *Bulletin* of the Society has been issued. It states that the desired two-hundred charter membership list, covering a wide representation throughout the United States, Canada and abroad, has been obtained; so far as noted, this is the first and only Delphinium Society in the world, and its inauguration is indicative of the widespread and growing popularity of the Delphinium in America.

Moray Field Club.—The beautiful gardens and woods of Burgie House, near Elgin, thanks to the courtesy of the proprietrix, Mrs. Thomson, were the venue of the Club's latest outing. Unfortunately, the weather was most inclement, but this did not detract from the pleasure the visitors experienced in wandering through the gardens, hot-houses and the fine old castle of Burgie. Mr. Ferguson, the gardener, acted as guide to the party, and his fine and intimate knowledge of his charges made the outing a highly instructive one. Two old stone dykes formed a natural setting for a fine collection of rock plants, and a clump of Primulas, tomato-red in colour, was much admired. Near to Burgie House stands a magnificent Copper Beech, declared to be the finest growing in this country. The Lily pond, Rose beds and fine collection of many-coloured Rhododendrons were much admired. The hot-houses provided much cause for admiration, containing as they do magnificent specimens of Begonias, Pelargoniums, Sweet Peas and a charming collection of dainty and finely-grown Ferns. Thence, through the woods the visitors wended their way to the flower and kitchen gardens. There was much to admire here, the herbaceous borders proving a great attraction, while a bed of delicately tinted Aquilegias made a strong appeal. The misty blue Hyacinths carpeting the woods, had only the weather been more propitious, would have received more attention. The Rev. J. G. Murray, Rafford, was to have given an address on Burgie Castle, but this pleasure, owing to the inclemency of the weather, was postponed until the end of August or early September, when the Moray Field men will again visit this fine estate. The president, Rev. George Birnie, voiced the feelings of the party when he said how deeply indebted they were that day to Mr. Ferguson for the kindness and courtesy he had extended to them.

Appointments for the Ensuing Week.—TUESDAY, JUNE 26: Royal West Renfrewshire Horticultural Society Council meets; The Royal Horticultural Society's Amateur Show. WEDNESDAY, JUNE 27: Royal Norfolk Agricultural Association's Exhibition (two days); Cheltenham Spa Floral Fête (two days); Guildford Rose Society's Exhibition; Wadhurst Rose and Sweet Pea Show. THURSDAY, JUNE 28: Paisley Florists' Society meets; Bideford Horticultural Society meets; Gardeners' Royal Benevolent Institution's annual festival dinner at Savoy Hotel. FRIDAY, JUNE 29: National Rose Society's Exhibition (two days) at Chelsea Hospital Grounds; Newport (Mon.) Horticultural Society's Exhibition. SATURDAY, JUNE 30: Société Nationale Les Amis de Pois de Senteur Exhibition (three days) at Brussels.

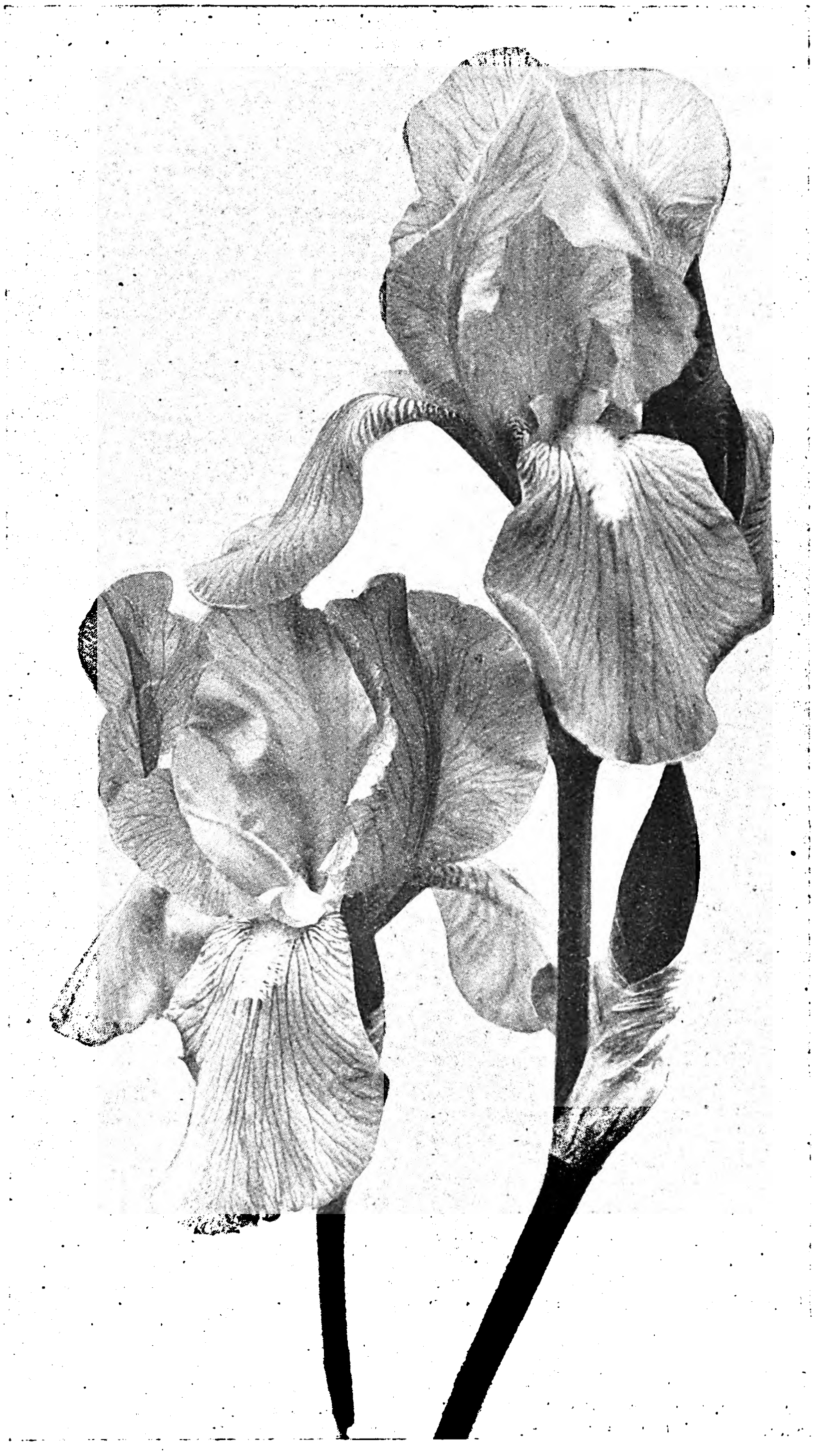

FIG. 215.—IRIS ROMANCE.

Flowers metallic-pink, with light purple falls and gold crest. Shown by Messrs. O. and P. Murrell at the Iris Society's Show on June 8 (see p. 439).

"Gardeners' Chronicle" Seventy-five Years Ago.—*How to drive away Moles.*—Take 1 lb. of Bean-meal, 3 ounces of slacked lime in powder, ½ ounce of powdered verdigris, and 4 ounces of essential oil of Lavender. After mixing thoroughly the powdery part of this composition, incorporate the oil. With a little water work the mixture into a dough. With this form balls the size of Hazel-nuts; they will harden after having been exposed to the air for twenty-four hours. Introduce them twenty or thirty feet apart into the moles' runs, or one ball may be dropped into the hole of each mole-hill, taking care to cover it up immediately. The smell of these ingredients is so offensive to the mole that he immediately deserts his ground. The mixture is, at the same time, a violent poison for moles, rats, and all such vermin.

Publications Received.—*The Chlorine Derivatives of Ethane and Ethylene*, Imperial Chemical Industries, Ltd., Novel House, London, S.W.1.—*Die Gartenbauwissenschaft*, edited by W. Gleisberg. Berlin; Verlag von Julius Springer,

The Week's Work.

THE ORCHID HOUSES.

By W. Gilden, Orchid Grower to Dr. F. Craven Moore, Manchester.

Scuticarias.—The two species of this genus generally seen in cultivation are S. Hadwenii and its varieties, which thrive well in the intermediate house; and the long, slender-leaved S. Steelii, which requires a higher temperature. These Orchids should be grown in baskets or fastened to teak-wood rafts, with a little A.1. fibre and fresh Sphagnum-moss. Fresh compost should be provided as the plants start into growth. Scuticarias grow well when suspended in a light position near the roof-glass, with plenty of room for the slender leaves to develop without injury; this is especially important with S. Steelii. Ample supplies of moisture in the atmosphere and at the roots are needed during the growing season, but after growth is complete only sufficient water is required to keep the plants from shrivelling.

Epidendrum prismatocarpum.—This evergreen species is now producing flowers which should remain attractive for several weeks; it is a fine Orchid for decorative and exhibition purposes. This robust-growing Epidendrum resents frequent root disturbance, but any necessary repotting may be done when the flowering period is over, with a view to the plant remaining undisturbed for two or three years. Specimens that have overgrown their receptacles or are in impoverished compost should have the useless back bulbs and old roots cut away and the sour compost removed, retaining two or three bulbs with each growing lead. When remaking large specimen examples, arrange one or more leads towards the centre of the receptacle. Use well-drained pots or deep pans and a compost of Osmunda or coarse A.1. fibre, in a rough state, a little Sphagnum-moss, and lump charcoal. This Orchid should be grown in a light airy position in the intermediate house, and it requires similar cultural treatment as advised for Cattleyas. Water should be given sparingly until the roots are established in the fresh compost, but afterwards ample supplies are required while the plants are growing actively; when growth is complete only sufficient water is required to keep the leaves and bulbs in a plump condition. The plants should be examined frequently for scale and other insect pests, which should be removed before they disfigure the foliage.

Epidendrum vitellinum.—The summer-flowering variety of this handsome cool house Orchid is now producing flower spikes from the partly developed growths, and the plants should require ample supplies of water at the roots until growth is complete, after which sufficient only to keep the bulbs in a normal state is required. The plants enjoy a light and airy position in a cool house, but they should be removed to a shady position when the flowers commence to expand.

THE KITCHEN GARDEN.

By Allen Falconer, Gardener to the Cheadle Royal Mental Hospital, Cheadle, Cheshire.

Exhibition Onions.—The beds should be mulched in preference to being hoed, at the same time supporting the foliage by staking, to prevent damage to the leaves when working amongst them. Plentiful supplies of water are necessary, and every endeavour should be made to build up the bulbs at this stage by giving them copious supplies of liquid manure, preferably from cow-sheds, applying it during the evening. Approved artificial manures may be given, also frequent dustings of soot. As the bulbs swell, the loose outer skins should be taken off and the soil around the bulbs removed to allow for even swelling and ripening at the base. In the north it is sometimes difficult to finish Onions, and weight has to be sacrificed somewhat; a final application of superphosphate about the middle of July should assist this process, and in some seasons the use of temporary lights over the beds during late August and September, when they are ripening, often prevents them from splitting and gives them the desired finished appearance.

Tomatos.—Maincrop plants under glass may now require copious supplies of liquid manure, and some artificial fertilisers, according to their condition, while mulching with a mixture of soil and horse manure should assist the plants while the fruits are swelling. Light shading of the glass after dull periods is often necessary to prevent the sun withering the top trusses near the glass. Excessive defoliation is often resorted to, but is a mistake. A few tips of the leaves only need be removed to allow the air to circulate amongst them, and if a few are taken off at a time no harm will be done. One often finds the best fruits for exhibition purposes under the shade of the leaves, and these should be taken off the plant before they are ripe, placed in soft material in a box, and ripened artificially, when they may be kept for upwards of a fortnight in perfect condition.

Mulching and Hoeing.—Many crops may benefit by being mulched with long strawy materials; if fresh from the stables, care should be taken to water it well directly it is used. Exhibition Onions and Carrots should always be mulched with short manure which has been passed through a sieve; this should conserve the moisture and also prevent the ground becoming hardened. The free use of the hoe during dry periods should do much to conserve the moisture in the soil, and also keep down weeds.

PLANTS UNDER GLASS.

By J. Coutts, Assistant Curator, Royal Gardens, Kew.

Crassula falcata.—This Succulent, and also C. lactea, are both South African plants, and succeed under the same cultural conditions as afforded the Rocheas. C. lactea is a low-growing plant which flowers during the spring, whereas C. falcata, which has fine, glaucous, fleshy leaves, usually produces its large corymbs of vivid red flowers during August and September. The latter species is somewhat uncertain in its flowering, and should at all times be fully exposed to the sun.

Arctotis aureola.—This beautiful species belongs to the sub-shrubby section and makes a handsome plant for conservatory decoration. It is by no means plentiful in gardens, for it is very difficult to propagate by means of cuttings, and it is not generally known that it may be increased readily by layering. For this purpose the plants should be planted in a cold frame and layered in the ordinary way. When the rooted layers are lifted and potted, they require careful attention for some time until they are established, and they should be kept close and shaded from bright sunshine for a few weeks, after which they may be given full exposure to the sun in a cool, airy greenhouse. If so desired, plants may be grown on into large specimens. Arctotis aspera and A. revoluta are two species which are increased easily by means of cuttings, the former species making a large specimen if so desired.

Hydrangeas.—As these pass out of flower the growths should be shortened back, and when they start growing again they should be potted on. They may be grown in a cool, airy greenhouse, in a cold frame, or even in the open during the summer months. While the plants are being pruned back any cuttings that are available should be secured and inserted singly in small pots; they root readily in a case in a cool greenhouse. When rooted they should be placed in five-inch pots, in which they may be flowered the following season. Plants propagated early in the year for flowering during the autumn should receive attention with regard to potting and feeding. Those which are required for the production of blue flowers should be treated according to the instructions issued with the proprietary preparations sold for this purpose; it is important that no lime be added to the potting soil used for treated plants. Compared with the older varieties, the many fine forms of recent introduction are much more reliable in their flowering habit.

HARDY FRUIT GARDEN.

By T. E. Tomalin, Gardener to the Earl of Bessborough, Stansted Park, Emsworth, Sussex.

Loganberries and Blackberries.—The young growths of the various types of Bramble are now growing apace, and, as next season's crop depends on their proper development, every encouragement should be given them to mature. The long shoots should be tied loosely to the supports, in such a position as to ensure full exposure to air and sunlight. These heavily cropping Brambles may be assisted now by watering them with dilute liquid manure, afterwards applying a mulch of farmyard manure.

Plum and Pear Trees on Walls.—All the young shoots which have been left to extend the tree or to form new branches, should be secured to the wall before they become so long as to be in danger of being broken or damaged by high winds or heavy rains. Exceptionally strong growths may be stopped by pinching out the growing points to assist the growth of the more backward branches. Any trees which are making unduly strong and gross shoots should be noted for lifting and root-pruning in October. Strong secondary shoots proceeding from the growths which were stopped last month may be again pinched at the first leaf, but, if the secondary growths are not too vigorous they may be left until the latter part of August, when a clean cut may be made with a sharp pair of secateurs to a dormant bud below the secondary shoots, after which no further winter pruning should be necessary, except the shortening back of the leading shoots.

Figs.—The growths of Fig trees should never be allowed to become crowded, but should be thinned where necessary, thereby favouring the production of sturdy, well-ripened wood. Trees which are overcrowded with growths produce soft, thin shoots, which, besides being unfruitful, are ill adapted to survive a severe winter. The young growths on Figs out-of-doors should not be stopped, because it is often only on the extreme ends of the shoots that the next season's fruits appear. Where the trees came through the severe frosts of the past winter undamaged, the young fruits are now swelling rapidly, and the crops may be assisted by watering the trees thoroughly with dilute liquid manure, or a complete fruit tree fertiliser may be applied and watered in. A few hours after watering, the surface soil should be hoed and then mulched with strawy manure of not too heavy texture.

FRUITS UNDER GLASS.

By T. Pateman, Gardener to Sir Charles Nall-Cain, Brocket Hall, Hertfordshire.

The Early Peach and Nectarine House.—When all the fruits have been gathered, the early trees should have the fruited wood removed carefully so that the new growths, which are to be retained to produce next season's crop, may be exposed to the light and air and become ripened. At the same time, cut out all superfluous growths, leaving the trees well furnished with young shoots which should then be tied in and syringed well twice daily to keep insect pests in check. If red spider is present the foliage should be sprayed with Volck, a new wash, which should be used according to the directions, and which, for keeping down this troublesome pest, is very useful. As a rule, the borders are generally kept somewhat on the dry side during the time the fruits are ripening; therefore, after the crop is gathered the borders should receive a thorough watering. Young, healthy trees do not require liquid manure, and clear water only should be used, but, on the other hand, older trees that have carried heavy crops may be improved and strengthened by the use of a concentrated liquid manure that is rich in phosphates. It is not advisable to open the ventilators to their fullest extent immediately the fruits are gathered; this should be carried out gradually, finally leaving the top and bottom ventilators wide open during both day and night.

Successional Crops.—Houses in which ripe fruits are hanging should be kept cool and airy. The fruits should be examined each day and all that are ready should be collected and placed on a soft surface in a well ventilated, cool room. Later trees should have their fruits exposed to the full light and sun, as recommended for the earlier crops. This operation should be carried out so soon as the fruits show signs of colouring, and feeding of the trees with an approved fertiliser should be continued until such time as the fruits are approaching ripeness, when it may be discontinued.

Cold Orchard House.—In this house various kinds of fruits are grown, and the work which needs attention is the pinching and tying in of the young growths. If the crops are considered still to be too heavy do not hesitate to thin them. Syringe the trees on bright days, but when the weather is dull and cold, syringing is not beneficial. Plenty of water should be applied at the roots, and stimulants may be given according to the size and strength of the individual trees. Those growing in pots should always be tested before supplying water at their roots. Air should be given freely during the day but reduced somewhat at night, although I always favour a little top ventilation in cold structures both night and day.

THE FLOWER GARDEN.

By J. G. Weston, Gardener to the Duke of Devonshire, Chatsworth, Bakewell, Derbyshire.

Spring Bulbs.—These have sometimes to be removed from the flower beds before the bulbs have matured; they should be laid in soil or ashes with as little delay as possible, and after being watered in, they may be left until the foliage has died completely, when they may be lifted.

Early-flowering Chrysanthemums.—After the recent rains these are growing freely and the Dutch hoe should be used at frequent intervals to keep the ground clear of weeds and in a friable condition. If slugs are troublesome, dust the plants occasionally with soot, during the evening for preference when the dew is on the plants, or after a shower. Soot that has been exposed to the air for some weeks should be used, for fresh soot is liable to burn the foliage. This may tend to keep the plants clean and healthy, and the soot is also beneficial when washed into the soil. If a hot, dry period sets in, a light mulch of spent Mushroom-bed manure, or similar material, is of great assistance in keeping the plants growing vigorously and in good health. This is particularly valuable on thin, dry soils, but in any case, frequent hoeing should be practised. Stake the plants early and keep the main stem firm, using strong ties to loop the outer growths to the main one. There is now an excellent selection of varieties in this class, and they may be procured in a wide range of colours. Much attention has been bestowed upon single varieties during recent years, and they now form a very popular section, and not only are they extremely useful for garden decoration, but they also provide suitable material for cutting—for which purpose they are unsurpassed. They may be had in bloom from July and August, until they merge into the main group of Chrysanthemums flowering during November and later.

Violas.—Part of the routine work just now, which should not be neglected, is to remove all faded blooms from the Violas. This should be done regularly, for if seeds are allowed to develop growth will be checked, and the supply of flowers may be lessened. Violas revel in good soil and plenty of moisture, and during dry periods water should be given freely. A light top-dressing of fine soil in which a little good artificial manure has been mixed, should benefit them as the season advances, especially if it is applied during showery weather; otherwise the ground should be soaked first, and then top-dressed, after which it should be watered lightly. The same remarks apply to Pansies, for good cultivation and plenty of moisture are the chief requirements of both these popular plants.

FOR NORTHERN GARDENERS.

By A. T. Harrison, Gardener at Jordanhill Training Centre, Glasgow.

Sweet Peas.—Where Sweet Peas were planted in well prepared trenches, they are now growing rapidly and should be given additional support of some kind to keep the plants erect. If exhibition flowers are required it is customary to place these supports in position before the plants are set out, so that they may be tied up as they grow, but for ordinary purposes time does not always permit of this close attention, and the plants may be allowed to grow and branch naturally. If good sticks of sufficient height are available, these form the best means of support, but where these are not procurable, a strong and light erection of posts and large-meshed wire-netting makes a very good substitute. The posts should be seven or eight feet above the ground when driven in, and the end pairs should be supported by means of stays, so that the strain of tightening the wire-netting will not displace them. The posts, if set in pairs one on either side of the line of Sweet Peas, should be kept apart at the top by cross pieces of wood about fifteen inches long, so that plenty of space is left for the plants to grow up between the double row of netting; the large size of the mesh employed allows room for the hands to pass through when the flowers are being gathered.

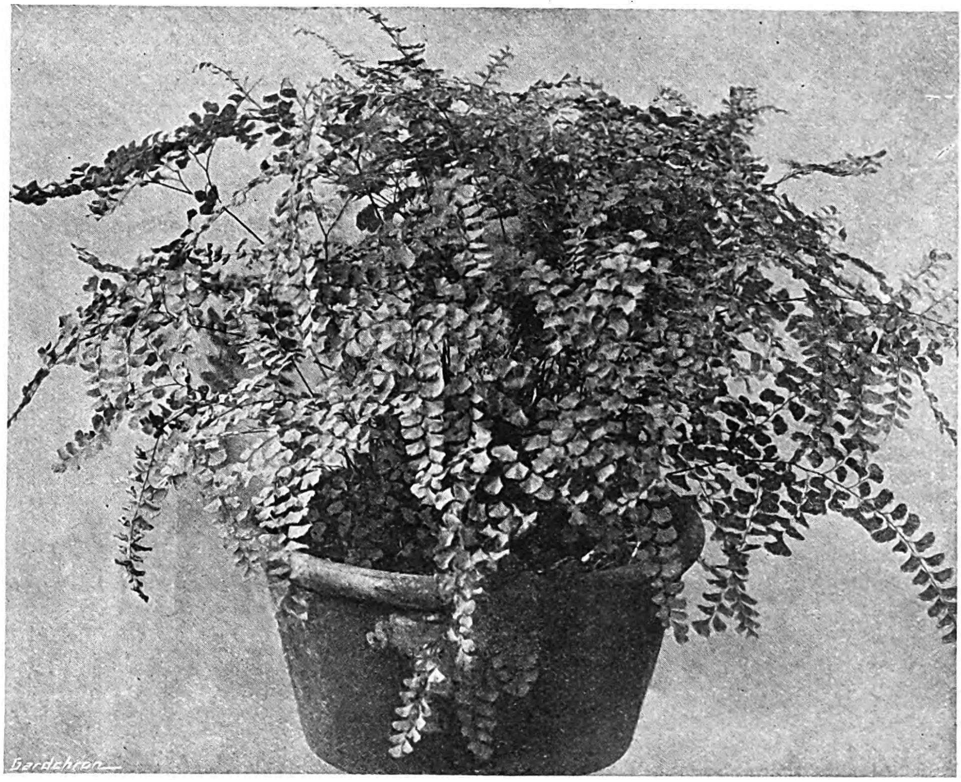

FIG. 216.—ADIANTUM FLABELLATUM.

R.H.S. Award of Merit, May 22. Shown by Mr. Amos Perry (see p. 376).

Auriculas and Polyanthuses.—These useful spring-flowering plants are now past for another season, and where they are overcrowded, or where their effect has not been satisfactory, they may be lifted and replanted. The new site should be prepared beforehand and enriched with well-decayed manure or plenty of leaf-soil, if available; the plants, when lifted and divided, should be set out from nine inches to one foot apart. Should dry weather set in immediately after replanting, water should be supplied until the plants become re-established. Seedlings of these and other members of the Primula family, which have been raised under glass this season, are now ready for pricking out, and a spare frame or shaded border should be prepared for their reception, making the surface soil as fine as possible, and lifting the seedlings with care so that the delicate roots are not damaged. With these, as with many other famileis of plants raised from seeds, it frequently happens that the tiniest seedlings are often the best, and the larger and coarser-foliaged plants, although more attractive in the seedling stage, are often of less value, so that even the smallest should be looked after and given at least an equal chance.

Gooseberries.—These fruits should be thinned where large dessert specimens are required, and the thinnings may be used for culinary purposes. If the bushes are given ample supplies of liquid manure the remaining fruits should swell to a large size. The Gooseberry saw-fly caterpillars are frequently very troublesome about this time, and measures should be taken to destroy them immediately with non-poisonous washes, before they become too numerous. This applies also to aphis on Black and Red Currant bushes.

Lupins.—This old-fashioned and most accommodating race of plants has of late years undergone a transformation, and the range of colours now available seems to be endless. The old purple, blue and white forms have been superseded by beautiful shades of pink, yellow and amber, and all are so easily grown, and make such a magnificent display early in the season, that their widespread culture is assured. Seeds may be procured now in a great variety of colours and if sown at once the plants should by this time next year make a fine display, when the best of them may be selected and grown on for future use. A few seeds of the Tree Lupin should also be sown, as in some localities this is rather a short-lived plant, but its scent is so delightful that it may be ill-spared where sweetly-scented flowers are appreciated. Specially good varieties of Lupins may be propagated from cuttings and the charming yellow variety, Sunshine, is best treated in this way, as experience has proved that seeds saved from this variety do not reproduce themselves true to type.

FLOWER GARDEN.

WALLFLOWERS.

Wallflowers are indispensable subjects for the spring bedding display, and it is a serious business if they are unsuccessful.

As the time for seed-sowing has arrived, a word or two about their cultivation should not be out of place. Too often one sees Wallflowers sown in impossible positions, and the directions on seed packets are not always a satisfactory guide. They may be sown at any time between May and July with success, but early sowing allows of the remedying of the possible failure of the first crop from prolonged drought or other causes.

Seeds should be sown out-of-doors in an open situation, not at the foot of walls or in warm, sheltered borders. Heavy soil of a retentive nature is most suitable; light, hot soils spell failure.

Sow the seeds thinly in rows eighteen inches apart, and a dressing of slaked lime raked in beforehand should assist in preventing attacks of club root. If the ground has been manured for a vegetable crop, so much the better, for the Wallflower resents starvation, but the proximity of tall or overhanging subjects should be avoided. When the seedlings have reached a height of four to six inches they should be thinned to from six to nine inches apart, according to the type grown. The thinnings may be planted in nursery rows six inches apart, with fifteen inches between the rows; the plants left in the seed rows will probably make the largest specimens, but the transplanted ones generally lift better in autumn, as the root system is more compact. A dull day, when rain has fallen overnight, is best for transplanting, and if the weather is bright the work should be delayed until the afternoon.

The final planting should not be delayed too long, and an attempt should be made to complete the operation during October. The beds or borders should receive a good dressing of well-decayed manure and a rather heavy sprinkling of soot, while a light dressing of slaked lime may be raked in at planting time.

The old Blood Red and Cloth of Gold are tall-growing varieties, splendid for furnishing large beds and borders. They should be planted firmly and fairly deeply, for they have to withstand the winter. If planted during October they have time to become established and their foliage becomes hardened before winter sets in. Later planting often results in the loss of foliage. If cold, wet or very exposed positions have to be filled, it is advisable to delay the planting until the spring, early March being a suitable time.

In addition to the two varieties mentioned, Ellen Willmott is a very fine red, and Fire King has blooms of a striking shade of orange, while Primrose Dame and Eastern Queen are of dwarfer habit; the latter is apricot yellow and pink. Vulcan and Ruby Gem are red and crimson varieties of dwarf, sturdy habit, while the double Wallflowers are also worthy of attention. *George Murray.*

INDODR PLANTS.

HAEMANTHUSES.

From the sun-baked veldts of tropical and southern Africa we have received many beautiful flowering plants, not the least conspicuous of which are the Haemanthuses, or Blood Flowers, the Latin name being derived from *haima*, blood, and *anthos*, a flower, referring to the colour of the blossoms of some of the species.

Although they belong to the Amaryllidaceae, to the casual observer they bear not the slightest resemblance to these subjects, as the flowers are formed in compact, ball-like heads, which are composed of a mass of small flowers with long, protruding stamens, packed so thickly in some of the species that they resemble round brushes, standing up stiffly out of the centres of the plants.

Some of the species are dwarf, growing only about nine inches in height, whilst others have huge leaves and massive inflorescences, on stalks about three feet in length. Some of them are entirely deciduous, whilst others retain their foliage all through the year; but they all require to be rested and kept on the dry side during the winter.

It is usual to classify them into stove and greenhouse species and varieties, but I find that there is no difficulty in flowering any of them in an ordinary, slightly heated greenhouse.

Repotting, which is necessary every three or four years only, should be done so soon as growth commences. A compost of loam, leaf-mould and sand suits them quite well. Some growers advise peat instead of leaf-mould, but I have always found leaf-mould satisfactory.

As with the majority of this type of plant, abundance of water is required during the growing season, but during the winter the plants may be laid on their sides under the greenhouse stage.

Although there are about three dozen species and hybrids, only three or four of them are grown outside botanic gardens. One of the most popular species is H. Katherinae. It has a globose bulb, about three inches in diameter, and broad, apple-green leaves about two feet in length. The flowers are produced on a stout scape which rises well above the foliage and bears from fifty to one hundred blood-red, star-shaped flowers. The filaments, which are of the same colour as the petals, are much longer than the flowers, and are therefore very conspicuous. The flowers are produced during July and consequently it is a popular subject for mixing with groups of foliage plants at summer flower shows.

H. albiflos has thick, leathery, obtuse leaves which are about six inches long and two inches wide. The flower spike grows nine inches in height, and is rendered conspicuous by its mass of white filaments which arise from innumerable tightly-packed flowers, giving the inflorescence the appearance of a paint brush.

H. coccineus is of similar type, but with red flowers. H. natalensis is a tall-growing species with broad, bright green leaves, the petioles of which are brilliantly marked with purple blotches. The inflorescence, the chief feature of which is its mass of yellow filaments and large stamens, is surrounded by a purple involucre and this combination of colours imparts to the plant a very striking appearance.

The remainder of the species are similar in general appearance to those mentioned above, differing only in height, colour and size of flower, but the majority of them are serviceable in the greenhouse or conservatory. *G. F. Gardiner, Botanic Gardens, Bristol.*

TREES AND SHRUBS.

CORIARIA JAPONICA.

Although classed as a shrub, this subject is in this country more herbaceous in nature, for it is not completely hardy. The growths usually die back during the winter and strong shoots are produced each year, some two feet or more in height. These are pithy, reddish-brown in colour, and angular, and on them the ovate-lanceolate leaves, which are smooth and entire, with long, tapering points and three conspicuous nerves, are produced, generally in pairs.

The male and female flowers are borne on separate racemes in clusters, the male racemes being shorter and more slender, and the flowers small and inconspicuous. The petals of the female flowers are in the first instance green, but later they thicken and turn bright red, afterwards changing to dark purple and enclosing the fruits. The fruits are round, bright red, changing to purple, and poisonous.

C. japonica was introduced to Kew from Japan in 1893, and may be considered as hardy in all but the coldest parts of this country. When happily situated, either in the wild garden, on the rock garden, or in the shrub border, in moderately moist, loamy soil, it is an extremely attractive subject.

It may be raised easily from seeds, which, if sown in pots in a cold frame or propagating house, germinate freely and quickly, while the seedlings grow fairly rapidly, and in a few years make large-sized plants. *M. W.*

LONICERA LEDEBOURII.

This old garden shrub is sufficiently distinct and beautiful to merit inclusion in any collection of shrubs, for it forms an attractive bush from five to six feet in height, and flowers with considerable freedom during June and July. The viscid flowers are yellow, tinged with red, borne on the axillary peduncles, while the leaves are ovate or oblong, acuminate, pubescent and tomentose on the nerves. The elongated branches are acutely tetragonal, and the growths are erect, thus rendering the species both useful and decorative when planted in a shrub border or as an isolated specimen.

L. Ledebourii grows freely in any good soil. It is closely related to L. involucrata, and was introduced from California in 1833. *Ralph E. Arnold.*

BOX.

One of the most noticeable characteristics of the American garden-maker is the desire to achieve immediate effects and impart to the garden he plans an appearance of age and dignity. To attain this end he will often go to a great amount of trouble and expenditure in moving large trees—so large indeed, that in Britain it would be considered almost impossible to transplant them safely. Thus it is, that landscape gardening—or "landscaping" as it is more often termed—is a very real profession and many firms specialise in this class of work. The American who builds a home wants a garden as a matter of course, but he wants it finished practically so soon as the dwelling is completed; he wants a garden he can enjoy, and is not content with planting for the benefit of his children. Furthermore, the average American does not love the plants for their own sake; he is only concerned with the effect that can be obtained by the grouping and planting of various trees, shrubs, etc., about his home.

One of the subjects most favoured for planting to lend an appearance of dignity and age is Box, which is regarded as a shrub, because in this severe climate it is not absolutely hardy and has to be protected from the rigours of winter by a covering of burlap, or similar material. The great majority of the Box trees planted in this region are imported from more southern states, Virginia supplying much of the material. Demand creates supply, and one flourishing New York business exists for the purpose of supplying this demand for large specimen trees of Buxus. The firm in question was founded about five years ago, and to-day has a turnover of more than $150,000 per year, with an ever increasing volume of business.

The Box—some specimens of which are more than a century old—are lifted with a large ball of soil, which is completely wrapped around with strong burlap, secured in position with encircling bands of wire fastened to vertical stays of stouter wire. Each plant is then placed upon a stout, wooden raft, or platform, which varies in size according to the size of the ball of soil and roots, and is made secure with stout wire lashings. The plants are then entrained and dispatched to the warehouses in New York City, where they are available for inspection by prospective customers. Some of the trees so handled are compact specimens, ten feet or more in height, and as much through, and weighing a ton or more. The soil in which they grow naturally is a stiff clay, and owing to this fact the ball holds together and specimens packed in this manner may remain unplanted for a year or more with impunity, provided they receive protection from strong sunlight and drying winds and are supplied with moisture at the roots.

In the New York storage quarters quite a large stock is always kept on hand and, as may be imagined, they represent considerable capital, for exceptionally good specimens sell at $1,000 each, while from $250 to $500 is the usual price for smaller plants.

Recently, we had half-a-dozen Box trees of varying size come to Greystone, and an enclosed photograph conveys some idea of the method of packing for transportation. From New York they were conveyed here by motor lorry, and after unloading at the nearest accessible point to the planting site, they were moved the remainder of the distance on rollers.

Holes of sufficient size having previously been dug, a derrick was rigged by means of which the plants were lowered into the holes. The wire lashings were then removed, one side of the hole cut to form an inclined plane, and the raft dragged from under the roots with the aid of a motor truck. After the plant was finally adjusted in the exact position required, the space surrounding the ball was filled with water and a hose-pipe left running into it for twenty-four hours in order that the roots might be thoroughly saturated before any soil was filled in around them.

So soon as planting was completed, preparations were made to guard these valuable acquisitions from the inclemency of the weather. To ensure this, two or three half-hoops of iron piping were placed over each plant, and their extremities fixed firmly in the ground. Strong burlap was then fastened securely to this pipe-frame-work. This forms an effective protection from cutting winds and heavy falls of snow, for it is these factors, rather than low temperature, which prevent the growth of such plants without adequate protection. *T. H. Everett, New York.*

ALPINE GARDEN.

ANTIRRHINUM SEMPERVIRENS.

Of the alpine garden, Antirrhinum Asarina is a well-known and popular denizen, and there seems to be no reason why the equally attractive A. sempervirens (Fig. 217), a perfectly hardy species from the Pyrenees, should not find similar favour in the eyes of those who cherish these choice plants of the mountainous regions.

A. sempervirens is bushy and semi-prostrate in habit, delighting in sunny situations and light, open soil. It is evergreen and almost shrubby in nature, and attractive both in its foliage, which is narrowly-oval, deep green and downy, and in the flowers, which are soft cream with a purplish blotch, and are borne in loose spikes from midsummer onwards.

Seeds are produced freely and cuttings of the young shoots form a ready means of increasing it during the summer, so that there is no reason why every rock garden or sunny rock-wall should not be adorned by this lovely dwarf Antirrhinum. *F.*

ARENARIA MONTANA GRANDIFLORA.

One of the most effective plants here for the past month has been the grandiflora form of Arenaria montana. Three small plants from three-inch pots were planted in a wall facing due north and shaded during the early hours of the day, and these have formed a handsome curtain of dark, grey-green foliage covering a little more than two square feet of wall. About a month ago, it commenced to deck itself for the summer display, and is now at the height of its beauty, which should last for some weeks to come. The whole mass is a solid sheet of pure white, and as the individual flowers of this sturdy form are large and handsome it may be understood that the effect of some thousands of them open at once in a small space, is really startling.

The plant is an inhabitant of Spain and Portugal, whence it was introduced in 1800, and is happy when tumbling over a rock in full sun as it is in the position I have described. It is one of the really indispensable plants, and may be increased freely both by seeds and cuttings. *Will Ingwersen, Sussex.*

POTENTILLA TONGUEI.

One of the most attractive of the dwarf Potentillas is this charming subject, which is supposed to be of hybrid origin and is quite distinct from any others of its type; for while the majority of the dwarf Potentillas have either white, yellow, or, as in P. nitida, pink-tinted blooms, those of this one are a good shade of apricot, the bases of the petals being suffused with crimson. They are produced plentifully during the latter part of the summer. The foliage is similar to that of the typical Cinquefoil, our native P. reptans, although it is of a much deeper green, while it forms a close mat and grows and spreads fairly freely when well situated.

P. Tonguei is a lover of the sun, and to ensure floriferousness it should be planted in a warm, open position, in light and loamy but not too rich soil, while the best means of increasing it is by dividing the clumps, preferably during early autumn or in the spring. *M. W.*

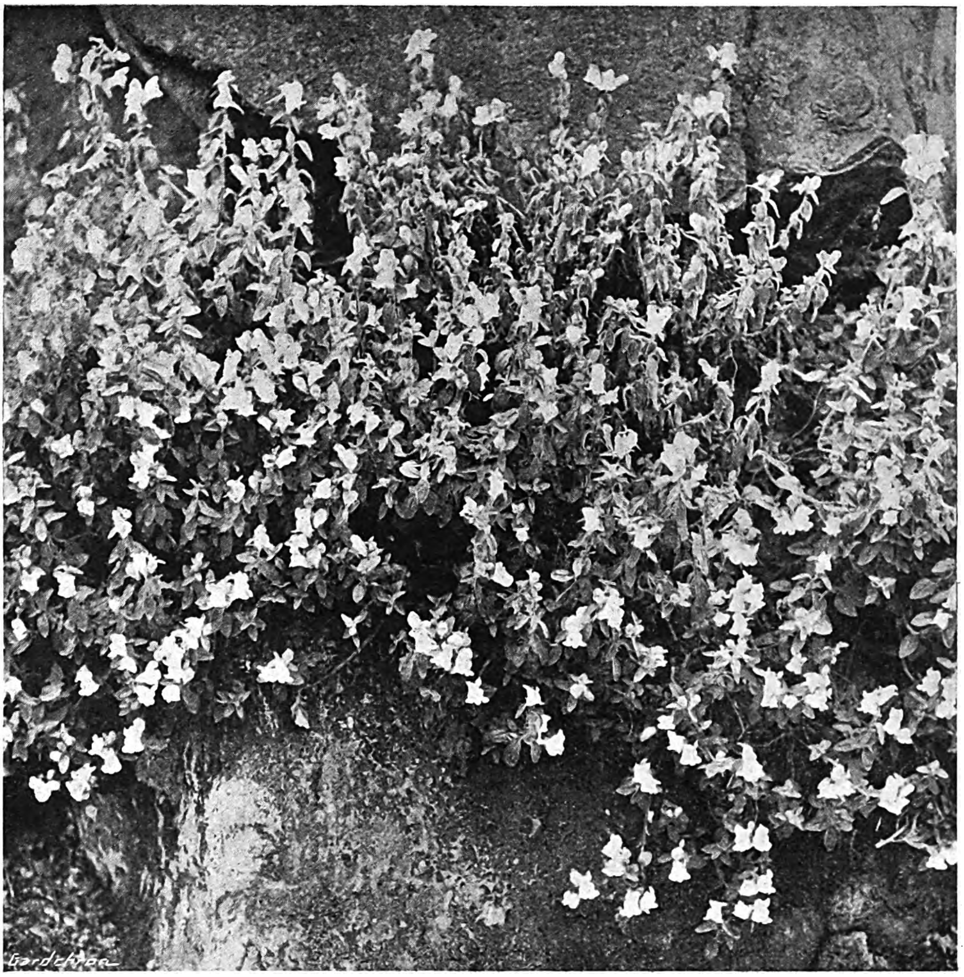

FIG. 217.—ANTIRRHINUM SEMPERVIRENS.

CORTUSA MATTHIOLI.

Cortusa Matthioli has been in British gardens since 1596 at least, but it is still rare, although the reason for its scarcity is not apparent, for it is an alpine plant of great beauty. In the name of the genus is perpetuated the memory of Jacobo Antonio Cortuso, who died in 1593, and who was the Director of the Botanic Garden at Padua. C. Matthioli figured in the *Botanical Magazine*, t. 987.

C. Matthioli belongs to the Order Primulaceae, and the genus is one which does not include many species, it being recognised that the dwarfer C. pubens is only a variety of C. Matthioli, and Farrer tells us that C. Protheri from the Himalayas, and C. hirsuta, are also only forms of this species. The only other to which he accords specific rank is C. Semenovii, from Alatau, which is said to have yellow flowers. So far as I can ascertain, neither the latter nor the two last-named varieties of C. Matthioli are in cultivation.

C. Matthioli is stated to be abundant at irregular intervals throughout Europe and northern Asia, so that it is rather surprising that it is not more commonly grown in this country. It is a native of coppices and woodlands, but with us it may be cultivated successfully in a cool position in the rock garden, sheltered from cold winds. With me it grows well here, in a nook sheltered from the east and north-east winds, and is apparently quite happy, despite the deplorable winters we experience in this country.

Reading carefully through the late Mr. Farrer's justly eulogistic account of the Cortusas in his *English Rock Garden*, one is inclined to wonder if that talented writer ever grew C. Matthioli at Ingleborough, for he tells us that it has taller stems than some woodland Primulas from China, and that its favourite flowering time appears to be July. Nurserymen and several other authorities give the height as six inches, which it is in my garden. Authoritative works vary a little in their statements of the flowering period; some give April to June, or May, and others merely give it as early summer. With me it came into bloom about April 22, after a far from favourable season for early flowering. It is planted in loam, leaf-soil and sand, but a cool woodland soil should suit it well.

C. Matthioli is an attractive plant with handsome leaves, rather like those of Primula Veitchii, but softer and crinkled, and beautiful, drooping flowers, which Farrer, with his vivid descriptive ability, states are like "the falling stars of a rocket, of pendent rosy-magenta bells." I cannot hope to improve upon this description of the flowers, but the whole aspect of this subject is beautiful. It may be raised from seeds or increased by division.—*S. Arnott.*

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MR. F. KINGDON WARD'S TENTH EXPEDITION IN ASIA.*

II.—JAPOO.

FROM the native village of Kohima, which covers a hill top overlooking the saddle with a compact excrescence of six hundred huts one gets a comprehensive view of the Japoo ridge, seven miles distant. The main peak rises more than 5,000 feet above the saddle; and its odd shape at once attracts notice. Briefly, Japoo comprises a narrow ridge, precipitous on both flanks, and cut off sharply at one end in a tremendous cliff. Eastwards, the ridge drops in an irregular series of giant steps, the treads of which are thickly forested while the risers are bare. It is not surprising that the Nagas view their mountain with pride, not untinged with awe.

There are several routes up Japoo from the north, where the Manipur road (Fig. 220) whips itself round the base of the range, crossing several deep valleys sunk far into the high flank. It was up one of these deep gashes that I proceeded to the top in 1918. But whichever route is taken, all arrive on the north-east shoulder, whence a steep climb is necessary to the summit. On this occasion I ascended by the direct route from Kohima, following a ridge all the way; the only disadvantage of this was that after the first camp there was no water.

November 30 was a dull, coldish day, with no sunshine and a threat of rain. Although I took only seven Sema Nagas with me, there were the usual delays at the very start. However, we got away at last, and soon leaving the high road, plunged into secondary growth and began the stiff ascent. The vegetation here consisted largely of high grass, with Alnus nepalensis, on which grew various species of Orchids, flowering garlands of the purple Crawfurdia campanulacea, Ailanthus, Strobilanthes, Senecio scandens and other Compositae, and bushy thickets of Rubus, Viburnum, Ilex, Polygonum, Osbeckia chinensis, Oxyspora paniculata and large bushes of the sweetly-scented Buddleia macrostachya.

I have often wondered why none of the Crawfurdias are in cultivation at home—at least, I have never seen any. There must be some difficulty in raising them from seeds, for I have sent seeds home more than once, and others have probably done the same. True, they are not likely to be hardy, but for winter decoration in the cool house, one imagines they would be first-rate. C. campanulacea is a charming plant with a generous abundance of large, Gentian-like flower-cups of a soft shade of purplish-pink. It keeps to the shady side of the hill, where the dew with which it is drenched each evening is not licked off by the morning sun.

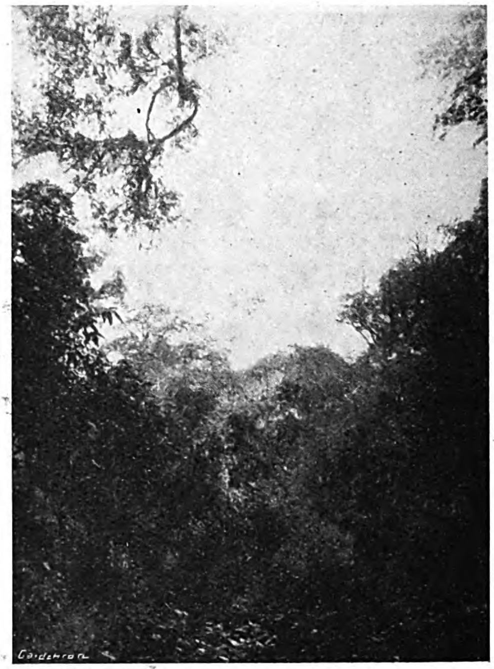

FIG. 218.—TEMPERATE RAIN FOREST, JAPOO, 7,000 FT. ALT.

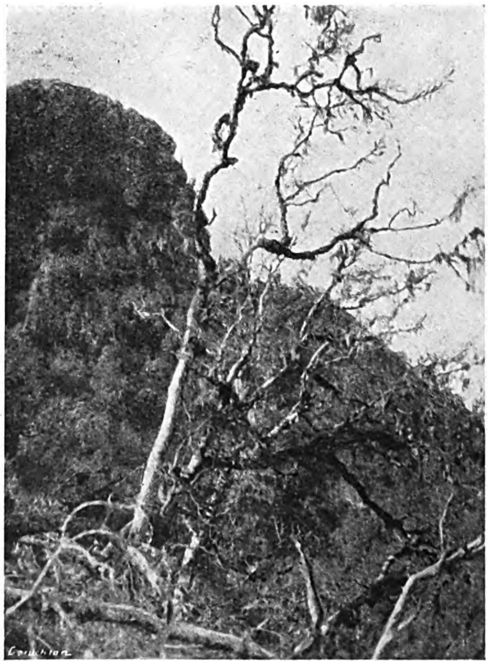

FIG. 219.—JAPOO SUMMIT.
Lichen-covered Birch in foreground; Rhododendron Macabeanum forest beyond; 10,000 ft. alt.

Soon we entered the lower temperate rain forest (Fig. 218), which covers the flanks of Japoo (and a great deal of the north-east frontier) between 5,000 and 7,000 feet. This forest is composed chiefly of species of Oak, with many large Araliaceae, and Bamboos growing so thickly as to make the forest in many places quite impenetrable. More scattered are Schima Wallichii, Acer sikkimense, A. caudatum, Manglietia sp., Michelia excelsa, and species of Ilex.

About two o'clock we reached a high jutting ridge, and the path traversed the face, descended for half-a-mile to a spring where our first camp was to be pitched at about 7,000 feet. I sent the coolies ahead to build me a *basha* (I had not thought it worth while to bring a tent), while I worked my way along the crest of the ridge to see what I could find.

The sunny face was covered mostly with grasses and bushes, and the north face with forest, although being very precipitous, the trees were stunted. Rhododendron arboreum and R. formosum were common here; much scarcer was another 'Maddeni' (K.W. 7717). Thickets of Pieris, Vaccinium, Gaultheria, Buddleia macrostachya, Bucklandia populnea, Viburnum and Quercus made it difficult to get along, even astride the ridge. Under the trees, Boenninghausenia albiflora pretended to be a Thalictrum. After reaching the end of the ridge, I retraced my steps to where the path crossed it, and soon reached camp.

The night was fairly warm—minimum temperature 41°—thanks to a muffling blanket of cloud; quite early I heard the dew crashing off the trees, and then the mist came swirling up, just as it does during the rainy season, and we did not see the sun again all day.

After breakfast, we started up the ridge. There was a good trail but it was steep and in places we descended sharply. On either side of us dense forest prevailed, but the actual narrow ridge was often covered with a thick scrub of Ericaceae. At about 8,000 feet, Rhododendron manipurense replaced R. formosum. The first-named grows to a considerable tree in the forest, but otherwise in foliage and fruits it closely resembles R. Maddeni at a casual glance. With it appeared a Rhododendron of the 'Irroratum' type, reported by the natives to have white flowers (K.W. 7725); and shortly afterwards I saw the first specimens of the magnificent R. Macabeanum discovered by Sir George Watt. It reaches a tremendous size, growing over forty feet high, with leaves fifteen inches long, and almost entirely covers the summit of Japoo (Fig. 219). The flowers are described by Watt as bright yellow, and the truss carries so many as eighteen, so that a tree in full bloom should be a grand sight.

After we had been climbing for nearly four hours, the Nagas asked me where the next water hole was. This was rather a shock; I expected them to tell me that! They had heard I had climbed Japoo before, but I explained that it was by a different route; apparently not one of my coolies had ever been on the mountain, for they belonged to a different part of the country. I therefore took stock of the position. My object was to camp high enough to be able to reach the summit easily next day, and we were by this time pretty high up. If we could find water, we might as well camp right away. And now the ridge came to an end, and we found ourselves on the steep, rocky face, encumbered with fallen trees; evidently we were near the top, but there was no water here. Unfortunately the weather was so thick that we could not see the summit, and had only a vague idea as to our position. So I decided to descend a little way and scout for water. Eventually we found a good site for a camp at an altitude of about 8,500 feet; but our efforts to find water were unsuccessful. There was nothing for it but to send men down to our former camp with all the utensils we could muster. The job did not appeal to them a bit, but eventually we persuaded three men to go. It was quite dark when they returned with the water. That night the temperature fell to 36·5°, and the morning sky was clear. After breakfast I started for the top with two men. We soon reached the point where we had turned back the day before, but after that the going became more difficult. The next Rhododendron to appear was a 'Triflorum' (K.W. 7,731), a species which I found in flower in June, 1918. It has flowers of much the same shade as those of R. yunnanense.

Still nearer the summit appeared R. Johnstoneanum, one of the 'Maddeni' series, very close to R. formosum, differing chiefly in the shape of the leaves, and in the more concentrated scalage of the lower surface. Nevertheless, had it not been for the mere fact that there was a gap of something like 2,000 feet between the uppermost R. formosum and the lowermost R. Johnstoneanum, I should have taken them for the same species; but then I did not see R. Johnstoneanum in flower. This R. Johnstoneanum, the 'Triflorum,' and R. manipurense persisted to the summit, on the sheltered face of the precipice, but the actual summit ridge, where not covered with a large-leafed, short Bamboo, was covered with R. Macabeanum and Birch. So aggressive was the former, that one slope a little below the summit, which had been cleared and reduced to a wilderness of derelict Birch trees (Fig. 219) and prostrate logs, was a perfect nursery of baby R. Macabeanums, aged about three years and upwards.

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* A previous article on Mr. Kingdon Ward's Tenth Expedition in Asia was published in our issue of June 9, 1928.

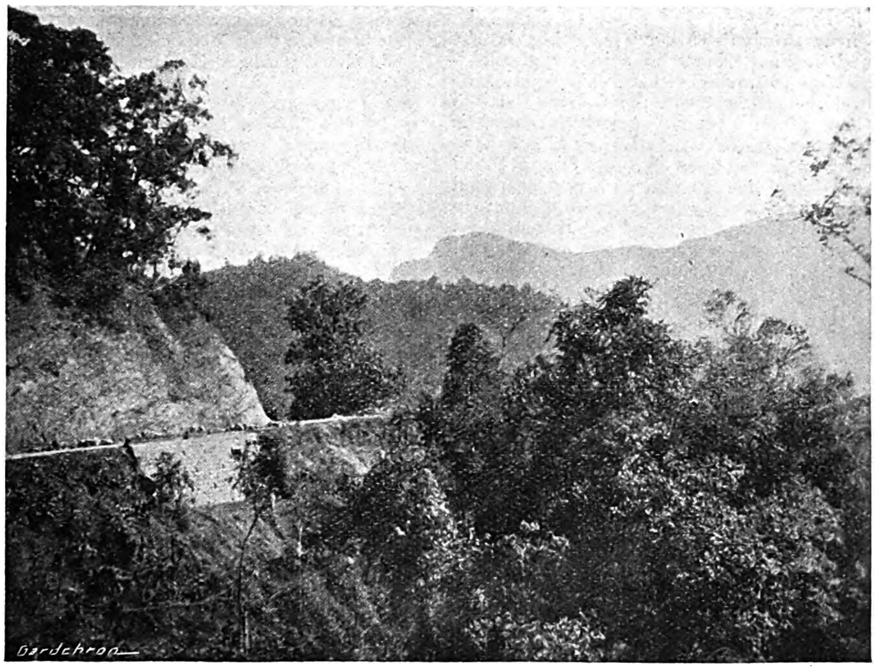

FIG. 220.—MANIPUR ROAD, NAGA HILLS.

On the summit, or just below it on the exposed side (where the sheer cliff edge was bevelled) grew thorny bushes of Berberis Wallichiana, chiefly notable for the few scarlet leaves scattered amongst the dark green. The waxy-white under surface of the leaf is characteristic, and the spines are long and sharp. There were a few flowers, but not a seed could I discover. Some tight, dwarf bushes of an Ilex, probably I. Pernyi, were in the same plight. A rather ordinary Cotoneaster completed the roll of interesting shrubs, other than a few Ericaceae.

Amongst herbaceous plants, however, was Aconitum ferox in fruit, and I captured some seeds of it; from what remained of a frozen specimen in premature—or it may have been retarded—bloom, I gathered that the flowers are a deep, glossy violet. However, this was not the time for the flowers that bloom in the spring, nor did the sheer slab of a cliff afford either foothold or shelter, which, but for a 'Bergenia' Saxifrage, was almost naked. A twining Lonicera which drooped from a crevice was void of fruits and offered no clue to its identity. Other undershrubs included Hypericum, Ficus and Buddleia, and further along grew thickets of Rubus and compact tufts of Gaultheria.

I was unlucky not to get a view from the top. Although the day was fine, enough mist was flying up to thicken the air. The wind, too, was sharp as a steel blade, making my Nagas shiver in their blankets; so, after spending an hour on the top, we started down, reaching camp about two o'clock. After a quick meal we continued the descent to the water hole, where we camped for the night. On the way down I collected Rhododendron vaccinioides—further confirmation of the resemblance between the Naga Hills flora and that of the Sikkim Himalaya. A large-leafed Phaius was abundant between 7,000 and 8,000 feet, and I gathered some plants. The only species of Ficus noticed was a creeper, on trees and rocks. Clarke mentions only one species of Euonymus in his list. I found three species on Japoo, one a small undershrub of the forest, another epiphytic, and the third a creeping species with short, erect, flowering shoots, growing amongst the Ferny undergrowth. Only one Conifer was seen, and that was both rare and unhappy; it bore no fruits, and looked like a Yew, but was probably Cephalotaxus Mannii. The forest was almost entirely evergreen, amongst the few deciduous genera being species of Pyrus, Betula, Acer and Viburnum. It is interesting to compare the Rhododendrons collected on Japoo with C. B. Clarke's list. He records, without comment, the following:—R. arboreum, R. Falconeri, R. barbatum, R. Maddeni and R. ciliatum. Of these R. Falconeri = R. Macabeanum, R. Maddeni = R. manipurense, and probably R. ciliatum = R. formosum. But what of R. barbatum? Where did he find it?—nay, *did* he find it? So far as we know, Watt saw nothing of R. barbatum on Japoo, nor is it likely that so keen an observer would miss it. Neither on this occasion, nor subsequently, did I see any 'Barbatum' species. The only other common tree Rhododendron in my experience is the 'Irroratum,' yet it is almost inconceivable that so excellent a botanist as Clarke could mistake an 'Irroratum' for R. barbatum, a plant he must have known well. Nor in the short time he was there could Clarke have explored the remoter flanks of the mountain; if he climbed it at all, he must have ascended it by one of the ordinary routes from Kohima. Therefore it seems to me that the presence of R. barbatum on Japoo is not proven; there may have been some mistake.

FIG. 221.—BULLOCK CARTS, MANIPUR.

To Clarke's list must now be added R. Johnstoneanum, one of Watt's finds, the 'Triflorum' (of which I can find no previous mention), the 'Irroratum,' the other low level 'Maddeni,' which is possibly a new discovery, and R. vaccinioides. Of the above, only R. formosum and R. manipurense are in cultivation, so far as I know. R. Johnstoneanum was raised from seeds sent home by Watt, but, according to Hutchinson, all the seedlings perished. I have now sent home seeds of R. Macabeanum, R. Johnstoneanum, the undetermined 'Maddeni' (K.W. 7,717), the 'Triflorum' and the 'Irroratum.'

December 3 was fine again, after the murkiness of the previous three days; as usual, bad weather dogged the footsteps of he who was rash enough to beard the spirits of Japoo on home ground! It was the more ironical in that the usual Christmas rains failed altogether, and the summit of the mountain was never again clouded before I left Kohima!

We went quickly down the mountain and reached the bungalow by midday, finding the temperature quite oppressive by comparison.—*F. Kingdon Ward.*

IDEAL GARDENS AND PLANT LORE.

The Flower-Shafts of Kama.

Kama is the Hindu Cupid, or God of Love. His garden is therefore to be planted by the side of that which has already been consecrated to Venus. In these western lands, however, it may be necessary to place it under cover, and we therefore suggest a conservatory adjoining the house and opening into it, that the perfume may pervade the room where lovers are wont to meet. For our plants will be oriental, delicate, aromatic, and their fragrance should not be lost.

Kama, as is seemly, carries a quiver. Every god of love does this; and the arrows which he shoots are apt to bring pain and sorrow to those who are stricken. The wounds do not always heal, the shafts cannot always be withdrawn, they seem often to be from a bow drawn at a venture, and reach the wrong mark. To the inexperienced it may be well to give a word of warning. Beware how you tempt Eros, Cupid, Kama, Aphrodite, Venus and others of that ilk. Kama rides a parrot, macaw or popinjay, and this is a parable. The Hindu poets when speaking of him say: "Him of the flowery bow." This bow is sometimes said to have been formed of the Sugar cane, because of its sweetness. Five arrows are carried in the quiver, each tipped with a blossom presented by the spring.

Sir William Jones, who took a peculiar delight in eastern poetry, wrote as follows:

> "He bends the luscious Cane, and twists
> the string
> With bees; how sweet! but ah! how keen
> their sting!
> He with five flowrets tips thy ruthless darts,
> Which through five senses pierce enraptured
> hearts;
> Strong Champa, rich in odorous gold;
> Warm Amri, nursed in heavenly mould;
> Dry Nakeser, in silver smiling;
> Hot Ketaka, our sense beguiling:
> And last, to kindle fierce the scorching flame,
> Love-Shaft, which gods bright Bela name."

These lines have been carelessly copied by writers on plant-lore, and the names obscured by faulty spelling, without any attempt to identify the plants signified, or help the reader to see their significance. The task of correcting the native names, and tracing them to their right association has, therefore, been a laborious one; but we are at last able not only to determine the flowers and plants here mentioned, but to give in addition some account of a number of other species which are to be found in Kamadera's garden.

Let us plant, in the first place, a worthy specimen of the Champa, or Champak. But since the name Champa is used in India to-day of some half-dozen different plants, the problem at first is to know which is intended. We are able, however, to fix upon the splendid Magnolia, Michelia Champaca in this instance. This is a fine tree with long, oval, pointed leaves, shining on the upper surface, and very fragrant yellow blossoms, which are offered in the temples and used by women to adorn their hair.

> "For temple garlands and decorations the powerfully-scented Champak, so lovely in its clear waxy-white just tipped with lemon-yellow, is almost invariably admissible, as are the various Jasmines, Gardenias and pink and white Oleanders."

Shelley writes:—

> "The Champak odours fail,
> Like sweet thoughts in a dream."

It is from the wood of this tree that images of Buddha are frequently carved for the temples. A rare variety is the blue-flowered form—

> "That blue flower which Brahmins say
> Blooms nowhere but in Paradise."

It is spoken of by the Hindus in the most flattering terms, and well deserves a foremost place in Kama's garden.

Next in order may be placed the Kamalata, Ipomoea Quamoclit, the most beautiful of its order, both in the colour and form of its leaves and flowers. Sir William Jones, writing in the *Asiatic Researches* (Vol. IV, p. 250), states that its elegant blossoms are, in the language of Milton, celestial rosy-red, love's proper hue, and have justly procured it the name of Camalata or Love's Creeper. "If ever flower was worthy of Paradise (he adds with enthusiasm), it is our charming Ipomoea." The Kamalata, records another not less enthusiastic student of Hindu plant-lore, is a delicious flower, by whose rosy blossoms the heaven of Indra is perfumed. Its popularity is shown by the variety of names which it bears.

The nearest rival to the foregoing is the far-famed Lotus. Kama is said by the old-time fabulists to have first made his appearance to mortals, floating down the Ganges on the broad leaf of this plant. Another legend is to the effect that the white Lotus of northern India was dyed red by a drop of Giva's blood which fell from heaven when he was wounded by Kama. The red Lotus does not seem to occur naturally in southern India. Kamala and Padma, we are told, are named after the Lotus, and they rank as goddesses in the Hindu pantheon. The modern term Kamal is applied in India alike to the Water-Lily (Nymphaea), and to the Lotus (Nelumbium).

One species of Hibiscus (perhaps H. phoeniceus) also bears the name of our God of Love in Sanskrit, while a Trumpet Flower, Bignonia (Stereospermum) suaveolens, is named the Messenger of Love or Kâmadûti. One species of Mountain Ebony, Bauhinia variegata, is named Kamalu, or *Pot de l'amour*, as Professor de Gubernatis translates it, and Kamari is the name of one of the shrubs or trees belonging to the genus Gardenia, probably G. gummifera.

In the list of plants enumerated by Sir W. Jones we find mention of the Bela or Love-shaft. Thus, writes another, Kama took his aim—

> "And loosed his love-shaft smartly from
> his bow
> As it should pierce a hundred thousand
> hearts."

What was this Love-shaft, or Bela? Folkard states that the Bel-tree, Aegle Marmelos, is held sacred in India, and is known as Bilva in Sanskrit and gives sundry particulars respecting it in *Plant-Lore, Legends and Lyrics, p.* 250, while Nairne, in his *Flowering Plants of Western India*, p. 48, tells us it is still known as Bil, or Bela. It is a tall, thorny tree belonging to the Orange and Citron family, with a long, Pear-shaped fruit, and flowers in panicles. It is said to be wild in the Deccan, but is cultivated throughout the whole of India.

Then we have the Kataka, Ketaka, or Kitticum, as it is sometimes spelt, Pandanus odoratissimus, or the Screw Pine. It has other modern names in India, such as Kevri and Khetki, but is in Sanskrit poetry, as in the Ramayana, named Ketaki, or Ketaka. The Nakeser, as I have written another of Sir W. Jones' names, is introduced into Moore's *Lalla Rookh* in the following graceful lines:—

> "Anemones and Seas of Gold,[1]
> And new-blown Lilies of the river,
> And those sweet flowerets, that unfold
> Their buds on Camadera's quiver[2]."

He adds the notes (1) "Hemasagara, or the Sea of Gold, with flowers of the brightest gold colour," and (2) "This tree (the Nagacesara) is one of the most delightful on earth, and the delicious odour of its blossoms justly gives them a place in the quiver of Camadeva, or the God of Love." His authority is Sir William Jones. The plant so named, Mesua ferrea, is cultivated everywhere in India, but its beauty and fragrance would justify a much wider planting. In Ceylon it is found near every Buddhist temple, the white rose-like blossoms contrasting singularly with the buds and shoots of the tree, which are of the deepest crimson tincture. One recalls Wordsworth's lines—

> "A silver shield with boss of gold,
> That spreads itself, some fairy bold
> In flight to cover."

It is commonly called Nag champa, but the Sanskrit is Nâga Cesara, from Nâga, a serpent or an elephant, and Kesara, or Keçara, meaning originally a lion's mane, then the filament of a Lotus or other plant. The name Keçara is applied to several well-known Indian plants, while in the Ramayana the term Nâga Keçara is specially appropriated to the Mesua, whose flowers, according to Hindu plant-lorists, are a special adornment of the garden of Paradise.

In his very instructive paper on "Select Indian Plants," presented to the Asiatic Society, Sir William Jones remarks that in the poem called Naishadha there is a wild but elegant couplet, where the poet compares the white of the Nâga Kecara, from which the bees were scattering the pollen of the numerous gold-coloured anthers, with an alabaster wheel on which Kama was whetting his arrows, while sparks of fire were dispersed in every direction.

To the Champak, Kelaka, Bela and Nakeser of Sir William Jones' list a fifth is to be added, namely the Amri, or Amra, which some take to be the Golden Fringe, Hoya retusa, or an allied species resembling the well-known Wax-plant. I am inclined, however, to think that the Mango tree, Mangifera indica, is the plant intended, on account of the place which it occupies in mythology and folk-lore. Nor does this exhaust the list of plants which are associated with the Hindu God of Love, since a species of Turmeric or Indian Cane, Curcuma aromatica (?) is named Kamini and Kamavati, while Kamuka is the name for two other plants, a Gaertnera, G. racemosa, and an Asoka named Jonesia, after the famous President of the Asiatic Society But this must suffice. Since I have no means of consulting many of the works upon which such studies depend if they are to be exhaustive, I must apologise if I have omitted from Kama's Garden any important plant which should be included in that delightful spot. *Hilderic Friend.*

THE LIABILITY OF PROPERTY OWNERS FOR INJURIES TO PERSONS PRESENT BY PERMISSION.

If an owner or occupier of land allows people to come on to his property without receiving any payment or other consideration for giving his consent, when, if at all, may he be made responsible for any injuries they receive while they are on his premises?

In a case before the Court of Appeal, a child of about three years old was playing in an unfenced field, which was owned by the defendant in the action. The evidence disclosed that the owner of the field knew that children used to play there, and that in fact they did so with his permission. On the land was a heap of stones, and while playing there the child was injured by one of the stones falling on her hand, with the result that her third finger had to be amputated.

Further, the jury found that the owner of the land should have known that there was some likelihood of the children being injured by the stones. Could the child, in these circumstances, claim compensation for the injuries to its hand?

In the course of his judgment, Lord Justice Farwell said that the grant of the licence (*i.e.*, the permission) to go on to the land created no right, but merely afforded an answer to a charge of trespass. It was a mere permission and those who take it must take it with all the chances of meeting with accidents.

There are, however, four exceptions to this freedom from liability. The first is that the owner of the land must not "allure" the people towards any danger, the second, that he must not create any concealed trap, as for example, a rotten plank over a stream. Thirdly, a distinction must be drawn between people who are given a bare permission to come on to the land and people who are there on some lawful business. Lastly, the owner of the land must not bring on to his property something out of the normal, which he knows to be dangerous, without warning the people who come there. So, in an old case, where a man had been allowed to cross a field, and the owner put in it a bull which gored him, he was held responsible.

Thus, I think we may say that as a general rule, where people are given gratuitious permission to go on to the land of another, they go there with all chances of meeting accidents, unless the accident was the result of one of the four exceptions set out above. *H. A. S.*

THE EFFECT OF THE PAST WINTER ON SHRUBS IN A WEST SOMERSET GARDEN.

The past winter is locally considered to have been the most severe experienced for over a hundred years. It is certainly the worst for a considerable period, as many fine old shrubs and trees throughout the district have been killed or seriously damaged. The following list of shrubs grown in my small garden at West Porlock may give some indication of the relative hardiness or otherwise of the various species. A wet, sunless summer left the plants in poor condition to face the winter, but the slight frosts of November did little damage. The third week of December was bitterly cold, 11° of frost being recorded in the screen on the night of the 18th. This was accompanied by a strong east wind which continued for forty-eight hours and played havoc with the garden. January was fairly mild but very wet, and February brought some warm days which encouraged early growth. The worst weather of the winter season occurred in the second week of March, when (after a slight snowfall) we experienced 15° of frost on the night of the 12th, and 7° on the following night. The havoc wrought on these two nights was very severe, and it will be apparent for years to come. Soft-wooded plants, such as Zonal and Ivy-leaved Pelargoniums and Mesembryanthemums, were practically exterminated throughout the district, while in some gardens old trees of Cordyline indivisa are hopelessly damaged.

Abelia floribunda, unhurt; A. triflora, unhurt; Abutilon megapotamicum, slightly injured; A. Canary Bird, badly cut back; A. vitifolium, unhurt; Acacia armata, killed; A. Baileyana, slightly injured, buds killed; A. dealbata, slightly injured; A. verticillata, killed; A. longifolia, severely injured; Aloysia citriodora, unhurt; Araujia sericifera, cut to the ground level; Azara microphylla, unhurt, flowered profusely.

Berberidopsis corallina, slightly injured; Billardiera longiflora, unhurt, on wall and as bushes; Bowkeria Gerrardiana, killed; Buddleia auriculata, slightly injured; B. officinalis, old plant injured, young ones killed; B. Farreri, unhurt.

Calceolaria alba, killed; C. integrifolia, severely injured; C. Sinclairii, cut to ground; C. violacea, cut to ground, some killed; Callistemon coccineus, severely damaged; C. salignus, slightly injured, no flowers this year; Camellia Sasanqua, unhurt; C. Thea, unhurt; Cantua dependens, killed to the ground but restarting; Carpenteria californica, unhurt; Cassia corymbosa, severely injured; Ceratostigma Griffithii, unhurt; C. Willmottianum, unhurt; Cestrum elegans, slightly injured; Cinnamomum Camphora, severely hurt; Clematis indivisa, unhurt flowered freely; Clethra arborea, severely hurt; Clianthus puniceus, slightly injured; Cordyline australis, mostly unhurt, few slightly injured; C. indivisa, slightly injured; Cornus capitata, slightly injured; Correa Harrisii, killed; Corylopsis pauciflora, slightly injured, but flowered well; Cytisus racemosus, severely injured, some killed; C. supranubius, unhurt (young plant);

Daphne odora, unhurt; Desfontainia spinosa, unhurt; Diosma gracilis, killed; Drimys Winteri, severely injured, flower buds killed;

Eccremocarpus scaber, unhurt; Embothrium coccineum, unhurt (young plant); Ephedra altissima, unhurt; Erica melanthera, killed; E. Veitchii, unhurt; Eucalyptus coccifera, unhurt; E. Stuartiana, severely injured; Eucryphia cordifolia, unhurt; Euonymus fimbriatus, young shoots killed; Eupatorium Weinmannianum, slightly injured.

Fabiana imbricata, unhurt; Feijoa Sellowiana, unhurt; Fuchsia cordifolia, killed to ground; F. excorticata, slightly injured; F. Cottinghamii, severely injured; F. reflexa, severely injured; Furcraea longaeva, killed.

Gaya Lyallii, unhurt.

Helianthemum rosmarinifolium, slightly injured; H. umbellatum, unhurt; Hoheria populnea, slightly injured; Hydrangea hortensis rosea, cut to the ground level; Hypericum balearicum, unhurt.

Illicium religiosum, unhurt; Indigofera Gerardiana, severely injured.

Lagerstroemia indica, slightly injured; Lavandula dentata, severely injured; Leonitis Leonurus, killed (large bush); Leptospermum scoparium, most unhurt; L. s. Nairnii, severely injured; L. s. Nicholli, unhurt; Lithospermum prostratum, old plants killed; L. rosmarinifolium, slightly injured; Lonicera Hildebrandtii, killed; Loropetalum chinense, severely injured; Luculea gratissima, killed.

Magnolia conspicua, flower buds killed; M. Watsoni, unhurt, but no flower buds; Mandevillea suaveolens, slightly injured; Maurandya Barclayana, unhurt; Melianthus major, killed to ground level; Mesembryanthemum, most killed, except M. Cooperi, M. agninum, M. tigrinum and M. uncinatum; Metrosideros lucida, slightly injured; Mitraria coccinea, slightly injured; Musa Basjoo, cut to the ground level, but restarting; Myrtus communis (broad leaf), slightly injured; Myrtus communis (narrow leaf forms), severely injured; M. Luma, unhurt; M. obcordata, unhurt; M. Ugni, slightly injured.

Nandina domestica, slightly injured; Nierembergia frutescens, unhurt in open, one killed against wall; Notospartium Carmichaeliae, severely injured.

Olea fragrans, unhurt; Olearia Fosteri, slightly injured; O. macrodonta, slightly injured; O. nitida, unhurt; O. semi-dentata, unhurt; O. nummularifolia, unhurt; O. stellulata, unhurt; Osmanthus Delavayi, buds browned, otherwise unhurt; Osteomeles Schwerinae, slightly injured.

Paeonia Moutan (Japanese vars.), many flower buds killed; Pentapterygium serpens, slightly injured; P. cordifolius, severely injured; Plagianthus betulinus, unhurt; P. pulchellus, unhurt; Plumbago capensis, killed; Polygala Dalmaisiana, killed; Prostanthera rotundifolia, severely injured; Psoralea aphylla, killed; Punica Granatum, severely injured; Puya chilensis, killed.

Rhaphithamnus cyanocarpus, severely injured; Rhododendron Lady Alice Fitzwilliam, many flower buds killed; Rhodochiton volubile, killed; Rhodostachys andina, unhurt; R. pitcairniaefolia, unhurt; Rosa Banksiae, flower buds killed; R. Lyallii, unhurt; Rosmarinus prostratus, slightly injured.

Salvia fulgens, cut to the ground, some killed; S. Grahami, unhurt; Solanum crispum, unhurt; S. jasminioides, slightly injured; S. aviculare, killed; S. K.W. 6,297, unhurt; Stuartia Pseudo-camellia, unhurt; Styrax japonica, slightly injured; S. Obassia, unhurt; Sollya Drummondii, killed; S. heterophylla, killed.

Tacsonia quitensis, killed; Tecoma jasminoides, killed to ground; Teucrium fruticans, slightly injured; Tricuspidaria dependens, severely injured; T. lanceolata, unhurt, except a few buds.

Veronica Hulkeana, killed; V. speciosa vars., slightly injured, some young plants killed; V. chathamica, killed; Viburnum Carlesii, unhurt; V. fragrans, unhurt; V. betulifolium, killed.

Yucca aloifolia, severely injured; Y. Whipplei unhurt. *N. G. Hadden, West Porlock, Somerset.*

NOTES FROM KEW.

There is nothing of greater value in the Rhododendron family at the present season than the Azaleodendron hybrid, Rhododendron azaleoides. The name of Azalea odorata is used in some nurseries and gardens, while in *Paxton's Magazine of Botany*, part X, tab., 147, it is figured as Rhododendron fragrans. For lawn beds and shrubbery borders it is a very valuable plant, free-flowering, the colour white, flushed and edged purplish lilac, and deliciously fragrant. Semi-evergreen, the close-growing bushes attain a height up to five feet or more. Cuttings made of the firm young shoots root readily soon after mid-summer, in a close propagating case, preferably with slight bottom heat. Raised about 1820, two alliances have been suggested as the probable parentage: R. viscosum ponticum, and R. viscosum × maximum.

× R. viscosum, with its white, or pink-tinted, blossoms, is a charming shrub for June flowering, in rather moist soils and semi-shade. A native of eastern north America, it has been aptly named the American Swamp Honeysuckle, for the shape and the size of the flowers suggest the Honeysuckle, and they are powerfully fragrant. Seeds provide a ready means of increase. The twiggy, deciduous bushes attain a height of five feet to six feet or more. For the semi-wild garden and open woodland, R. viscosum is deserving of mass planting.

Rhododendron micranthum is one of the most distinct of all the Chinese Rhododendrons introduced to our gardens during the present century. In foliage and flower it suggests a Ledum, for the leaves are less than one-and-a-half inch long, and a quarter- to half-an-inch wide. The small, white blossoms are closely packed in a short terminal raceme one inch to one-and-a-half inch across. First introduced from Western Hupeh by Mr. E. H. Wilson in 1901, R. micranthum has proved to be a very hardy and easily cultivated shrub. Ripening seeds freely, this is a ready means of increase. It is one of the Rhododendrons being tried with apparent success in soils containing lime. A wide, spreading bushy evergreen, it grows some four feet to five feet or more in height, and as much, or more, in diameter.

Raphiolepis japonica, with white flowers, and R. Delacouri, with pink blossoms, are two useful bushy evergreens for the front of shrubbery borders. R. japonica is June-flowering, but R. Delacouri, which is said to be a hybrid, produces clusters of pink blossoms from now onwards until frost checks development in late autumn. Warm, sunny positions should be chosen for planting, and a well-drained soil, to which a little peat or leaf-mould should be added when preparing the ground for planting. Increase is by cuttings inserted in a close propagating frame during July or August.

Among the Escallonias, the one of outstanding merit at the time of writing is E. langleyensis. A hybrid between E. Philippiana and E. punctata it is quite distinct from either parent, with its long, slender branches clothed with rosy-red blossoms. A dozen plants in a lawn bed or shrubbery border become, in a few years, a mass of arching stems ten feet high and twenty feet through.

Genista cinerea is a tall-growing Broom producing masses of bright yellow blossoms during June. A native of south-west Europe, it thrives and flowers uncommonly well in the light, sandy soil of Kew. The average height is eight feet to ten feet. A Canary Island Broom, Genista virgata, grows about the same height and has approximately the same flowering season, but whereas self-sown seedlings of G. virgata are common in borders and thin woodland, I have never seen G. cinerea ripen seeds at Kew. It is, however, readily propagated by cuttings inserted in a bed of sandy soil in a cold frame during August.

Several June-flowering Thorns are delightful trees of moderate size for pleasure-ground planting. They appear particularly effective by the waterside. One of the best flowering Thorns in the Kew collection at the south end of the Temperate House is Crataegus × Carrierei. It has dark, glossy-green leaves and large corymbs of white blossoms followed by quantities of orange-red fruits which hang on the trees well into the new year.

With its small, deeply-cut leaves, and masses of white blossoms, several trees of the Oriental Thorn, Crataegus orientalis, and the variety sanguinea, are conspicuous and attractive. Two other species in this group with deeply-lobed leaves are C. Leeana (syn. Dippeliana) and the Tansy-leaved Thorn, C. tanacetifolia, both distinct and beautiful June-flowering trees.

The American High Blackberry, Rubus nigrobaccus, is a very distinct and useful flowering shrub for the semi-wild garden and shrub border. Growing four feet to six feet high, the stems terminate in inflorescences of white blossoms up to about one foot long.

Division, as with Raspberry canes, is a ready means of increase.

In the Spiraea collection, at the south end of the Temperate House, and elsewhere in lawn beds and borders, three strong-growing Chinese Spiraeas are prominently in flower; all have white flowers. S. Henryi is notably wide-spreading in growth, six to eight feet high and much more in diameter. S. Veitchii is a strong, upright growing bush nine feet or ten feet tall, with arching shoots clothed with corymbs of white blossoms. S. Wilsonii is more spreading in growth, the long, lax stems being studded with corymbs of attractive blossoms in June.

In view of their vigorous and wide-spreading growths care should be taken not to associate these Spiraeas with shrubs of moderate growth and stature, unless it be at the background of wide shrubbery borders. One may, perhaps, picture them best massed on the woodland boundary, and in open clearances through woodland dells.

There is always something attractive and pleasing about a well-flowered bush of Sophora viciifolia. The bushes at Kew are some eight feet high, with elegant Fern-like foliage, and crowded with mauve or blue-tinted white, Pea-like blossoms. For preference, plant this shrub in sunny positions in a light, well-drained soil. In cold districts such a beautiful shrub is worth a place on a wall. When first introduced from China in 1897, it was grown with success on a west wall at Kew. Seeds and cuttings made of half-ripe, young growths in July, provide ready means of increase. *A. Osborn.*

THE GENUS PRIMULA.

(*Continued from p.* 436).

BRACTEATA (Franch.). Bracteate P.
(Bullatae.)

A **perennial** species with a long, woody stem clothed for the greater part with the dried remains of the previous season's foliage. Leaves one-and-a-half-inch to two-and-a-half inches long, oblong, blunt, coarsely toothed, deeply wrinkled above, glandular, hairy, non-mealy, tapering into a narrowly winged stalk. Flower stem short, not rising above the foliage, bearing an umbel of five to ten yellow, rather long-tubed, concave blossoms about five-eighths-of-an-inch across, on short stalks. Corolla divided into five broadly heart-shaped, notched lobes.

Grows in clefts in and on ledges of limestone rocks on the Tali range of Yunnan, western China, at considerable elevations above sea-level.

Culture: Sandy loam and limestone chippings in a shady spot, or a damp cleft in a limestone rock packed with peat, is indicated. Protection from damp in winter is probably essential.

BRACTEOSA (Craib). Large-bracted P.
(Petiolaris-Sonchifolia.)

This perennial species has remarkably variable foliage. The leaf-blades vary from spathulate to ovate-spathulate, ovate and oblong, with a tapering, truncate, heart-shaped, or rarely wedge-shaped base, while all have a distinct, more or less winged stalk; they vary from two to three inches in length, by one to two inches in width, and have short, sharp teeth on their margins. The surface is sparsely covered with short glandular hairs; some of the inner bracts are stalked and leaf-like. The species has only been gathered when in seed, but the blossoms are probably purple, and are no doubt of decorative value.

Grows in sandy leaf-soil in shady places, forests, etc., on the mountains of Bhutan, at from 8,000 to 10,000 feet above sea-level.

Culture: Leaf-soil, loam and grit, in a fairly damp, shady spot is indicated.

BREVICULA (Balf. f.) Short-spined P.
(Nivales.)

The foliage of this dwarf perennial species is smooth and glossy above and densely covered with white meal beneath. The leaves are three to four inches long, more or less spoon-shaped, with distinct, narrowly-winged stalks; they are blunt or pointed, the margins being regularly and rather coarsely toothed. Flower stem three to five inches long, fairly stout, mealy among the blossoms. Flowers in an umbel of about six, blue with a purplish-yellow eye, fragrant. Corolla about five-eighths-of-an-inch across, divided into five egg-shaped segments, with three distinct teeth at their tips; tube cylindrical, three-eighths-of-an-inch long.

Flowers in June. The plant is found in moist limestone pastures and ledges of limestone cliffs on the Lichiang range and other mountains of northern Yunnan, western China. Introduced in 1914

Culture: Fibrous loam, peat and limestone chippings in half-shade, with protection from wet in winter, should suit this species.

BREVIFOLIA (Forrest). Short-leaved P.
(Amethystina.)

A species resembling P. amethystina somewhat closely, with smooth, non-mealy, paper-like leaves, one inch to two inches long, with ovate-elliptic blades tapering into a winged stalk; margins with saw-like teeth. Flower stem slender, three to seven inches tall, bearing a one-sided umbel of four to twelve semi-pendulous, deep blue, faintly fragrant flowers, on stalks a quarter-of-an-inch to five-eighths-of-an-inch long. Corolla funnel-shaped, with short, broad, irregularly toothed lobes; tube three-eighths-of-an-inch long.

Flowers in July and August. A pretty plant inhabiting damp, open, alpine pastures on the Mekong-Salwin Divide, Yunnan, western China, at 14,500 to 16,000 feet above sea-level. Introduced in 1914.

Culture: Good fibrous loam and limestone chippings in a moist, open spot, is indicated, with protection from damp in winter. *Gard. Chron.*, 1915, p. 207, Fig. 63. *A. W. Darnell.*

(*To be continued*).

A REVISION OF VIOLAS.

(*Continued from page* 315).

Viola Thibaudieri, Franchet et Savatier, is dismissed by Farrer as a Japanese of no value. The flowers, it is true, are small, but their colour is not recorded (being white in the herbarium specimen), and with the example of V. biflora of the European Alps before us, it would be imprudent to underestimate any Violet on account of its smallness of flower alone. V. Thibaudieri has been seldom collected, and its authoritative description is incomplete, but it belongs to a section extending from northern Japan southwards along eastern Asia to Tasmania and New Zealand. The only representative of this section I have been able as yet to obtain is V. arcuata, Blume, the cultivation of which has not been difficult, but I have not yet seen its blossoms. The section, as a whole, is one of minute but brightly-coloured flowers. V. Thibaudieri appears to present certain peculiarities—the solitary terete stem; the swollen nodes; the midrib of the leaf prominent on both sides; the leaves green above, pale below; the stems green above, violet at the base; the stipules adnate below, free above; and the extremely short petioles.

V. Thomasiana, Perrier et Songeon, is an alpine V. hirta, attaining 7,500 feet, as in the Maritime Alps, and sometimes not more than four centimetres in height. The blossom is very fragrant, and is generally of a rosy tint, but sometimes white. Its area seems to be confined to the western Alps, Switzerland and the Tyrol, and among its more well-known stations are the Madonna della Finestre in the Maritimes, slopes above Mürren in the Oberland, and San Salvatore above Lugano. It appears to be exclusive to siliceous formations, at least in the Maritimes.

V. triloba, Schwein., the Three-lobed Violet, occupies a middle place between V. palmata and V. sororia. The leaves of the latter are always uncut, whereas those of V. triloba are generally uncut in their first and last forms, but are divided into from three to seven lobes in their summer form, and in the variety dilatata are with difficulty distinguished from those of V. palmata. Further, the flowers of V. sororia are smaller, on stems shorter than the leaves, whereas those of V. triloba are larger and borne well above the leaves. The deep violet flowers make V. triloba one of the best of the American species. It extends from Vermont—its most northern point—southwards along the Appalachians to Florida.

V. uliginosa, Besser, is not a Violet of the far north in the sense of V. Selkirkii, but is native to Europe east of a line from Sweden to southern Austria, extending eastwards to Moscow. It might almost be called the Muscovite Violet, as it is frequent near Moscow, Petrograd and Warsaw. I have had seeds from three sources, but only an equal number of plants have resulted. It is a little-known species, and in the absence as yet of a full description of the plant, I am unable to say if the three plants are genuine. V. uliginosa is the only representative of the "repentes" section of Violets, being distinct in its creeping root, with underground stolons. It is a plant of bogs, ditches and peat meadows, and it is said that on the moors near Laibach (now in Jugo-Slavia under an unpronounceable name which the railway guides interpret as Lioubliana) it makes a characteristic feature of the vegetation.

V. uniflora, L., is a yellow Violet of very different classification from V. biflora. The one or two stems rise to about eight inches (more when in seed), are leafless below or bearing only one scale, the leaves being concentrated in the upper part of the stem. They are almost sessile, or with very short petioles, and their form varies from reniform to triangular and from cordate to cuneate. The flowers are yellow, on short stems, and are considerably larger than those of V. biflora. It is native to Manchuria and Mongolia. It has very definite association with V. pubescens of North America.

V. Valdieria, Allionii, is fully described by Farrer from his own knowledge of its habitats in the Maritime Alps. So far, however, from being classed as a variety of V. cenisia, it now heads a distinct group of five species distinguished mainly by the division of the stipules into many fingers. Although generally on siliceous formations, it has been found, on the undoubted authority of Briquet, on limestone, in the Roja valley north of Ventimiglia. Although found usually at low elevations, it ascends to upwards of 7,000 feet, always in much the same positions of scree as V. cenisia. Farrer states that the plant is thoroughly villous, but this character varies considerably, as does also the division of the stipules, the latter in the lower leaves being sometimes entire or nearly so. I have not yet found anybody successful with it, although many have tried it. It flowered in the moraine at Wisley last summer, but it remains to be seen if as good a report may be had next July.

V. variegata, Fischer, has been already referred to under V. ircutiana (*Gard. Chron.*, August 13, 1927), to which it stands in the relationship of species and variety. Farrer appears to be in error in relating it to V. dissecta, and also in describing the flowers as of pallid colour. V. variegata belongs to the same section as the Patrinii group, and the petals are dark violet, white at the base, with a pale spur. In addition to the variety ircutiana, there is a variety nipponica, infrequently found in Japan, with flowers larger than the type.

V. vallicola, Nelson, is simply a form of V. Nuttallii with more broadly ovate radical leaves.

V. vestita is Grenier and Godron's variety vestita of V. cenisia, and is now known as V. diversifolia. See under V. Lapeyrousei in the *Gardeners' Chronicle*, August 13, 1927. *E. Enever Todd, Lt.-Col.*

(*To be concluded*).

ABBITIONS TO THE LINDLEY LIBRARY.

The following books have been presented recently to the Royal Horticultural Society's Lindley Library :—

Bateson, Beatrice. *William Bateson, F.R.S., Naturalist, his essays and addresses, together with a short account of his life.* Illus. 8vo. Cambridge, 1928. (2).

Birkenhead, J. *Ferns and Fern Culture.* 3rd. ed. rev. by F. Parsons. Illus. 8vo. (1912). (6).

—— (Another copy). (6).

Chun, Woon-Young. See Nanking. National Southeastern University.

Comber, H. F. Field notes of plants collected by. See McLaren, H. D.

Coventry, B. O. *Wild Flowers of Kashmir* (Series II). Col. pls. 8vo. 1927. (2).

Cox, E. H. M. and Taylor, G. C. *Primulas for Garden and Greenhouse.* Illus. 8vo. 1928. (2).

Driver, A. and W. See *Pomona Britanica.*

Gibb, E. Hughes. See Hughes-Gibb, E.

Grey, Robert M. *Report of the Harvard Botanical Gardens, Soledad Estate, Cienfuegos, Cuba (Atkins Foundation)*, 1900-1926. la. 8vo. Cambridge, Mass., 1927. (2).

Hu, Hsen-Hsu. See Nanking. National Southeastern University.

Hughes-Gibb, Eleanor. *The Life-force in the Plant World or Creative Nature.* Illus. 8vo. 1928. (2).

Hunger, F. W. T. *Charles de l'Escluse (Carolus Clusius).* Nederlandsch kruidkundige, 1526-1609. Illus. la. 8vo. 's-Gravenhage, (1927). (1).

Icones Plantarum Siniocarum. See Nanking. National Southeastern University.

Jackson, Benjamin Daydon. *A Glossary of Botanic Terms with their Derivation and Accent.* 4th ed. 8vo. 1928. (2).

Lemmon, Robert, S. See Wright, R. *House and Gardens.*

L'Escluse, Charles de. See Hunger, F. W. T.

McLaren, Henry D. (Ed.) *Andes Expeditions* 1925-6 *and* 1926-7. *Field Notes of Plants collected by H. F. Comber.* sm. 8vo. [Edinburgh, 1928]. (7).

Maris, K. E. *Introductory Science for Botany Students.* Illus. 8vo. 1928. (2).

May, H. B. and Sons. *Catalogue* of upwards of 2,000 species and varieties of Ferns and Selaginellas. Illus. la. 8vo. [1913 ?] (6).

—— (Another copy). (6).

Miethe, Es. [Ed.]. See Schlechter, R. *Die Orchideen.*

Moricand, Moise Etienne. *Plantes nouvelles d'Amerique.* Pls. 4to. Geneva, 1833-46. (1).

Nanking.—National Southeastern University. College of Agriculture. Department of Botany. —*Icones plantarum Sinicarum.* Ed. by Hsen-Hsu Hu and Woon-Young Chun. Fasc I. Pls. fol. Shanghai. 1927. (1).

Pomona Britanica, The, or, Fruit Garden Displayed . . . with a botanical lexicon . . . By Several Hands. Rev. by A. and W. Driver. Col. pls. sm. 4to. 1788. (1).

Robbins, Wilfred W. *Principles of Plant Growth.* An elementary botany. Illus. 8vo. New York, 1927. (2).

Robley, Augusta J. *A Selection of Madeira Flowers, drawn and coloured from Nature.* Col. pls. fol. 1845. (1).

Schlechter, Rudolf. *Die Orchideen : ihre Beschreibung, Kultur und Zuchtung.* 2te Auflage herausg. von. E. Miethe. Illus. 8vo. Berlin. 1927. (1).

Silva Tarouca, Ernst, Count, and Schneider Camillo [Eds.] *Unsere Freiland-Stauden Anzucht.* . . . 4th ed. Col. pls. Illus. 8vo. Vienna and Leipzig. 1927 (2).

Sutton and Sons. *The Culture of Vegetables and Flowers from Seeds and Roots.* 17th ed. 8vo. 1926. (2).

Taylor, G. C. See Cox, E. H. M. *Primulas.*

Watson, W. *Cactus Culture for Amateurs.* Illus. 8vo. 1903. (8).

Wright, Richardson and Lemmon, Robert S. *House and Gardens, Second Book of Gardens.* Illus. 4to. New York, 1927. (9).

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(1).—Purchased. (2).—Sent for Review. (6).—Presented by Mr. H. B. May, V.M.H. (7).—Presented by the Hon. H. D. McLaren. (8).—Presented by Miss M. Farley. (9).—Presented by Mr. G. Monro, C.B.E.

NOTICE OF BOOK.

Hardy Evergreens.*

This handbook of 127 pages is from the pen of Mr. Frank A. Schrepfer of the Department of Landscape Architecture, University of Pennsylvania. In preparing his work the author appears to have had in mind the requirements of garden lovers of the northern States of North America, rather than those of the southern States and countries like the British Isles, for the greater part of the work is devoted to Conifers, and no more than passing mention is made of other evergreens. This would appear to be a mistake as the publishers apparently wish to push the book in the British Isles where a wealth of hardy evergreens may be grown in gardens in addition to those included amongst the Conifers. However, all the cultural details, propagation, planting, pruning, etc., are quite sound, and people interested in gardens should derive a good deal of information from the work. The early part of the book is devoted to cultural questions, and the latter part to descriptions of Conifers. There are numerous text and full-page illustrations.

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* *Hardy Evergreens : A Practical Handbook on the Planting, Growth and Management of All Hardy Evergreens, exclusive of the Broad-leaved Species.* By Frank A. Schrepfer, U.S. Department of Landscape Architecture, University of Pennsylvania. New York; Orange Judd Publishing Company Inc. London : Messrs. Kegan Paul, Trench, Trubner and Co., Ltd., 1928. Price $1·25 net.

VEGETABLE GARDEN.

AUTUMN AND WINTER SALADS.

The provision of salad plants during the autumn and winter calls for foresight and attention during the summer, and it should not be overlooked during this busy period if possible. Chicory is one of the most useful subjects for this purpose, and seeds of a good variety should have been sown during late April or early May, in soil on which Celery or Leeks were grown last season. As the seedlings grow they should be thinned out to one foot apart, and the suface of the ground hoed constantly to promote free growth and keep down weeds. They should require little more attention until the foliage ripens in the late autumn, when the roots may be lifted as required, the foliage partly trimmed off, and the plants placed closely together in the Mushroom house, or any dark shed. If planted in clusters of three or five, in nine-inch pots, or placed in deep boxes of any light soil and watered in, they should soon begin to grow again, and when the growths are about nine inches high they may be cut at the base and should serve as excellent salad material.

Chicory should be grown as cool as possible, or it may become infested with fly, and when ready for use it should be creamy-white in colour. Complete darkness is essential to prevent the growths becoming green, when the delicate flavour will be lost. Small batches introduced frequently are better than larger ones, the produce being fresher and the risk of waste lessened. After this treatment the roots are of no further use and should be discarded.

Endive is another serviceable plant for winter use, and seeds may be sown during June and July ; an excellent place for the earlier batches is on the ridges between the rows of Celery. Sow the seeds fairly thickly and thin the seedlings to one foot apart. Dust soot around the plants and keep the soil stirred well. During hot weather water the Endive at the same time as the Celery in the trenches is being watered, during the late afternoon for preference. The curled forms are very attractive, and the earliest varieties may be blanched where they are growing by placing six-inch pots over them ; the later batches should be lifted and planted in cold frames, or treated as advised for Chicory. When being blanched, Endive requires an abundance of air, for the plants are liable to damp off.

The Broad-leaved Batavian variety is valuable for general use as, on good soil, it makes plenty of foliage ; if this is gathered together and tied with raffia it should blanch well in the open ground. Later supplies should be protected from excessive wet and cold. Plants may be lifted with good balls of soil, planted in frames, and covered with mats during severe weather. Endive, after blanching, should be of a creamy colour ; if green it is apt to taste somewhat bitter. Where frames are available seeds may be sown in them to save both time and labour.

Lettuce seeds may be sown at frequent intervals from June onwards in the open ground and the seedlings thinned according to the habit of the variety. Sowings made in frames during late July and August should provide plenty of material for use during autumn and early winter, and the plants should be afforded so much air as is consistent with free and healthy growth ; the quickly maturing varieties, both Cos and Cabbage sorts, should be selected for these sowings. Encourage free growth by thinning the seedlings early, stir the surface soil frequently, and remove all faded leaves.

Tomatos for use during the later months of the year need encouragement to ripen their fruits by the use of fire-heat ; at the same time they require ample supplies of fresh air. The foliage of robust varieties should be thinned to allow the sun to reach the fruits, which should be gathered directly they are ripe and placed in a store room where they keep perfectly well for a considerable time if placed carefully on clean wood-wool.

Radishes are a piquant addition to the salad bowl, and these may be sown at frequent intervals during the autumn in any vacant frames. Sow them in fairly rich soil, broadcast but thinly ; cover them slightly with fine soil and keep them watered well. Late in the season these should not require much air, and the frames may be closed early in the afternoon, for the quicker they are grown, the better will be the results. Varieties that are sown early in the year for forcing on hot-beds are suitable for these autumn sowings, for they mature quickly and make only a small amount of top growth.

Late batches of Cucumbers growing in houses require plenty of heat and moisture to bring them to perfection during late autumn, and the fruits should be cut so soon as they are ready. The plants should be fed well and top-dressed with rich soil, and the growths should be thinned and kept tied in. The fruits remain fresh for several days if kept in a cool place with the stalks placed in fresh water every day.

Mustard and Cress are also valuable salad ingredients, and weekly sowings made in boxes of loamy soil and placed in a warm house, should provide useful material. Do not cover the seeds with soil, merely press them in firmly and water them in with a fine-rosed can, after which cover the boxes with paper until the seeds have germinated. The seedlings should be ready for use in about a week, and should be removed to a cooler place for cutting. *R. W. Thatcher.*

FRUIT REGISTER.

STRAWBERRY FILLBASKET.

This is a very useful variety, often succeeding where others fail ; the berries are of fair size, bright red, and of quite good flavour, while they are splendid for preserve or good for table use.

It is a prolific bearer and flowers late, this latter fact rendering the variety extremely serviceable for positions liable to late frosts. It is a maincrop Strawberry, and was raised by Messrs. Laxton in 1898, and it is not very free in the production of runners.

Here, in north Gloucestershire, we experience the prevailing difficulties connected with Strawberry growing, and after the second season a plantation is rarely worth persevering with, but the variety under notice is certainly more reliable and possesses greater persistent qualities than do several other better-known sorts. A characteristic of this Strawberry is the comparative shortness of the flower stems, and the blossoms are often almost completely covered by the ample and vigorous foliage. *Ralph E. Arnold.*

HOME CORRESPONDENCE.

Osmanthus Delavayi.—*J. P.'s* description of Osmanthus Delavayi as a small bush of slow growth (page 355) is quite inconsistent with the true character of a plant that has taken rank as one of the best things brought from the Far East during recent years. In our experience its annual growth is free; there are several specimens in this country over eight feet high. A special merit of this charming shrub is the profusion of blossom which it produces each spring. *Herbert Maxwell, Monreith.*

The Genus Primula.—I hasten to correct a slip which crept into the article on this subject on p. 355, where the number of known species and sub-species was given as more than 530. It is not so clear as it should be from the context that this is the total of Chinese species and sub-species. *A. Grove.*

Norwegian Forget-me-not.—Surely the plant asked for on page 306, and referred to on page 360, is Omphalodes linifolia, now in bloom and exactly like a tall, white Forget-me-not, with lovely grey stalks and foliage. My plants, growing in an herbaceous border, are twenty-two-and-a-half inches high and branching. I had the seeds from Italy some twenty years or more ago. It is a lovely subject and far too little seen, and an annual; sow seeds about August or early September where it is to bloom, thin the seedlings to about six inches apart in autumn, then let it take care of itself, and it should reproduce itself year after year. Here it forms seeds in masses, and the old plants are pulled up when they are ripe, about July. Weathers, p. 671,* mentions the lower leaves as "wedge-shaped," which I have never seen; all are long and narrow. *K. M. Hinchliff, Instow, North Devon.*

COLONIAL CORRESPONBENCE.

WHITE WATSONIAS.

I notice in two recent issues of your excellent journal references to the above (pp. 218 and 226). One of your correspondents, *J. C.*, calls the one under notice W. Meriana alba, and states that it is generally known as W. Ardernei, and the other, *Will Ingwersen*, calls it W. var. O'Brienii, and states also that it is listed as W. Ardernei. I think there is some confusion in regard to this Watsonia. More than forty years ago two corms were brought here by the late Mr. R. Templeman and given to the then Superintendent of Parks, the late Mr. J. Wilson. They were carefully tended and increased rapidly. Mr. J. T. Butters, Mr. Wilson's successor, carried on the work and sent some corms to Mr. James O'Brien, who gave the name of W. alba iridifolia O'Brienii. For a good many years this was the only white Watsonia known here. Then it became known that the late Mr. Ardern had discovered, or had received, another white variety. This was distributed under the name of W. Ardernei. It completely ousted the first-named variety. It possesses all the characteristics of W. a. i. O'Brienii—the Eucharis-like purity of the flowers, the vigour and adaptability of the plant, and it has this great advantage over the deposed variety, that the flower is harder in texture. Softness was the one weak character of W. a. i. O'Brienii, whereas the one listed as W. Ardernei is as hard as the coloured varieties of the open veldt. It would not be an easy matter to find a plant of the original white sort. My object in asking permission to trespass on your valuable space is to protest against this Watsonia being called by any other name but W. Ardernei. The name of Ardern deserves to be honoured in the botanical and horticultural world. Years ago, Ardern's garden was the Mecca of horticulturists in South Africa. For two generations plants were collected and established in his wonderful garden. It was the La Mortola of the southern hemisphere long before we had our National Garden at Kirstenbosch. It is, I think, only right that the name should be preserved by a plant that in Africa, at any rate, will be grown throughout the ages. *C. E. Butters, Prince Albert Park, Port Elizabeth, South Africa.*

SOCIETIES.

SOCIÉTÉ NATIONALE D'HORTICULTURE DE FRANCE.

In spite of the unfavourable season, and a disastrous month of May, the Spring Exhibition of the French National Horticultural Society, which was held from May 25 to June 3, at the Cours-la-Reine, was a very fine one.

Among stove plants must be mentioned the fine exhibit of M. Chantrier, of Mortefontaine, which included beautiful specimens of Nepenthes and a series of new Caladiums. Among the latter was Caladium luteum roseum, with reddish markings on a yellow ground. There were also Bromeliads (Nidulariums) on tree-trunks, and the rare Platycerium angolense. The National Horticultural College at Versailles (Director, M. Pinelle), had also a goodly group of plants, including some fine Gloxinias. Gloxinias were also shown by MM. Vallerand, frères, of Taverny, together with tuberous Begonias. M. Billard, of Vésinet, also had tuberous Begonias, single and double.

Hydrangeas were well represented; M. H. Cayeux, Director of Plantations at Le Hâvre, again showed his seedling varieties. Besides the certified plants mentioned later on, he showed Champion, bright red; and Emblème. red, of medium size, with the heads well furnished with blooms. M. Travouillon-Buret, of Tours, had a fine group of the new variety Madame Faustin Travouillon, a beautiful brilliant red variety raised by M. Barillet. MM. Mouillère, of Vendôme, showed a number of different varieties of their own raising, such as Madame Philippe de Vilmorin, pink flowers with fringed petals; and Beauté Vendômoise, with large, white, widely separated petals. Most notable, however, was the curious hybrid with semi-double flowers raised from Hydrangea Domotoi. Some of the plants were extremely interesting, with the inflorescences in the form of cones, not flattened as in the usual varieties. The flowers were large and semi-double; they clearly indicated a new departure. M. Decault, of Blois, had also a very meritorious exhibit, including Hydrangeas Rouget de l'Isle, a fine red; Madame Mouillère, Générale de Vibraye, and Maréchal Foch.

The exhibits of Orchids were, as usual, grouped together in a small hall specially reserved for their accommodation. Instead of the usual arrangement on tiers, the greater number of the exhibitors made an effort after a more artistic mode of presentation, with Ferns and foliage plants. M. Guttin, of Argenteuil, had a very fine exhibit of Cattleyas and hybrids, including Brasso-Cattleya Veitchii, and B.-C. Tilly, pink-fringed labellum, with magenta markings. MM. Vacherot et Lecoufle, of Boissy St. Léger, had some very excellent Phalaenopsis, including P. Elisabeth (Rimstadiana × grandiflora) which was awarded the Charles Mattan prize for the finest Orchid of French origin in the show, and P. Gilles Gratiot (Aphrodite × Rimstadiana), with large, pure white flowers. They also showed a fine series of Odontiodas, notably O. Gloriana, brown with white points; and a very good specimen of Masdevallia Veitchiana grandiflora, with scarlet flowers.

M. Perrin, of Clamart, showed Cymbidium Cérès, and C. Pauwelsii; Laelio-Cattleya G. S. Ball and Anguloa Clowesii

M. Marcoz, of Brunoy, staged Miltonia Roi Albert, a large flower marked with deep pink; and Brasso-Cattleya Bourg d'Oisan, with an enormous magenta labellum. MM. Maron et fils, of Brunoy, had a superb plant of Brasso-Cattleya Dunkirkii superba var. Charles Maron, bearing nine flowers with large magenta labellum, the centre yellowish, and the divisions pale pink; also Brasso-Cattleya Vilmoriniana, pink with yellow centre; and B.-C. Madame Charles Maron, pale pink.

M. le Blevennec, Bois Colombes, showed likewise an excellent group of Cattleyas and hybrids, including Laelio-Cattleya Fascinator and L.-C. Gottoiana.

The firm of Vilmorin-Andrieux et Cie had at the end of the tent, a large mixed group of flowering plants, with the richness of colour which one associates with this name. In the centre was a hollow square planted with Nemesias and blue Ageratums. All around was a variety of plants, including Stocks, Chrysanthemum segetum, Verbenas, Antirrhinums, Digitalis and Petunias. Occupying a dominant position were some magnificent Schizanthus Wisetonensis in pink shades, and Chislehurst Schizanthuses, in violet tones. In the background was an atrium painted white and crowned with Zonal Pelargoniums, with Tropaeolum Lobbii climbing up the pillars; the display was completed by Roses trained in parasol form, and large sheaves of white and pink Eremurus. At the sides were masses of Cinerarias and Calceolarias, notably a very fine group of Cineraria polyantha, with light inflorescences.

The firm of Laumonnier-Férard, of Paris, showed an attractive exhibit of rock plants. A low brick wall was furnished with Campanula muralis, and in front a paved walk was ornamented with Saginas, and diversified with square beds of various plants including Antirrhinums and large-flowered Campanulas.

M. Weiss, of Saint-Cloud, had a little garden in the Japanese style, with old specimens of Thuya obtusa, Pinus densiflora, Cycas revoluta, etc.; in the centre was a pretty arrangement of rectangular paving with the interstices generously furnished with small, well-flowered alpine plants, such as Achillea, Saponaria ocymoides, Veronica Teucrium, Lychnis Viscaria, various Helianthemums, etc.

M. Thiebaut, of Paris, showed an interesting collection of Cacti, including Cereus, Echinocactus, various Opuntias, Mamillarias (including the curious M. micromeris cristata), Echinocactus myriostigma, Cephalocereus senilis, and some fine Phillocacti in flower.

M. Gallais, of St. Cyr sur Loire, staged a small collection of Heaths, well-flowered, including Erica ventricosa alba and magnifica, E. brevifolia and E. translucens.

MM. Cayeux et le Clerc, of Paris, showed cut flowers of single seedling Paeonies; M. Olivet, of Châtillon sous Bagneux, had a group of the pretty new variety of Zonal Pelargonium Nouvelle Aurore, of Lemoine, scarlet-red with a white centre. The Arboricultural College of St. Mande (Director, M. Duvernay), arranged a group of Coleus with enormous leaves.

The central portion of the tent was occupied by a large and effective scene representing gardens laid out by the designing department of the firm of Moser et fils, Versailles. A part was set out in French style, with grass lawns, wooden seats, and large, irregular paving. In the centre was a pond, lined with coloured mosaic, and ornamented with large, blue vases entwined with Nasturtiums, the main floral decoration consisting of groups of various kinds of Polyantha Roses. At the sides were arches with Roses growing over them, and behind, a group of Azalea mollis in many varieties, their brilliant colours enlivening the semi-shadow of the situation.

MM. Cayeux et Le Clerc, of Paris, had a very striking exhibit of garden Irises, including the finest modern varieties, many of them of their own raising. In addition to those certificated, of which the list will be found further on, there were Germaine Perthuis, violet; Belissair, brown, lower divisions purplish-pink; Marc Aureau, lavender, lower divisions violet; Bourem, vinous pink; Le Grand Ferre, mauve, lower divisions vinous pink; Fedora, yellow, lower divisions purple-violet; Solferino, bright lilac-red; and Jacqueline Guillot, lavender-blue.

The firm of Vilmorin-Andrieux also showed Irises, including such fine varieties as Isoline, Velouté, Empress of India, Madame Gaudichau, Spahi, Alliés, Oriflamme, magnifica, Ambassadeur, and some more recent seedlings with large flowers, such as Mignard, clear violet; Léonard de Vinci, soft violet-mauve; Cassiopée, soft violet; Le Corrège, soft violet, the lower divisions blackish-violet; Bellatrix, reddish; Orion, dark soft violet; Etoile de Matin, sulphur-white; and some Irises of the Apogon series, notably a curious form of I. sibirica, with appendages similar to tufts on the stigmata. In both groups, that of MM. Cayeux et Le

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*A Practical Guide to Garden Plants.

Clerc and Vilmorin, there were some fine varieties of Dutch Irises.

Roses were shown in large numbers. MM. Moser et fils, of Versailles, had a fine series of dwarf Polyanthas, such as Verdun, red; Lady Reading, pink; Golden Salmon, bright salmon; and such other dwarf Roses as Reims, yellowish white; Etoile de Hollande, deep red; Julien Potin, yellow; and arches and pergolas abundantly furnished with the flowers of excelsa and Dorothy Perkins, pink.

MM. Lévèque et fils, of Ivry, had a fine exhibit of climbing and other Roses, and also dwarf Roses in pots, including Souvenir d'Alphonse Turc, a very pretty dwarf Polyantha of cream-pink colour. In pots, they had Madame Edouard Herriot, Admiral Ward, Golden Ophelia and Président Parmentier, pink; among new Roses were Condessa de Castilleja, a pinkish yellow Pernetiana; Marie Dot; Cuba, pink; and Ville de Paris, a fine yellow.

From M. Defresne, of Vitry, there was an important exhibit of beautifully flowered Roses, including a fine series of Wichuraianas and Polyanthas trained in parasols or in pillars. Sodenia was a pretty weeping Wichuraiana covered with thousands of little pink blossoms. There were also Paul's Scarlet Pillar, in dwarfs and standards; Amélie de Béthune, pink with yellow centre; Mrs. Courtney Page, Betty Uprichard, George Dickson, Hadley, Golden Emblem and Golden Ophelia. Among dwarf Polyanthas were Dr. A. Kater, a fine pink variety, and Orange King.

From MM. Nonin et fils, of Châtillon sous Bagneux, there were two very fine groups of Roses outside the tent. Tall columns were clothed with American Pillar, Hiawatha, Châtillon-Rose and Joseph Guy, a Polyantha with large red flowers. Two recent sports from this latter variety were Distinction, a large pink variety, and Léon Chenault, crimson.

Rhododendrons were finely shown by MM. Croux et fils, of Chatenay, who had good specimens of Souvenir de G. Croux, deep red; Mabel Corey, pink; Annie Cordonnier, pale pink; Lady Eleanor Cathcart and Annica Bricoque, mauve. Among those shown by MM. Moser et fils, of Versailles, were some fine specimens, including Boursault, mauve; G. Peabody, pink; Marcel Moser, deep red; and catawbiense alba.

M. Tuilleaux, of la Celle St. Cloud, had an interesting group of fine and rare specimens of Conifers and various trees and shrubs, including Sciadopitys verticillata, Podocarpus koraiana, Juniperus virginiana pendula, and Ilex ferox aurea. M. Lécolier, of La Celle St.-Cloud, also had a very fine exhibit, including Cupressus Lawsoniana darleyensis, C. L. Westeriana (weeping and golden), Euonymus Wilsonii, with large foliage; the pretty Cytisus Dallimorei; and others.

M. Martin-Lecointe, of Louveciennes, also sent some interesting specimens, among which were Retinospora squarrosa Veitchii, Picea inverta pendula and the attractive Euonymus radicans Silver Gem.

M. Renault, of Orleans, presented a group of his own variety of Berberis, B. Thunbergii atropurpurea, with deep purple foliage. M. Nomblot-Bruneau, of Bourg-la-Reine, showed, as usual, a very fine collection of fruit trees trained in various ways, both Pears and Apples, and also a collection of fruit trees in pots covered with fruits, including Cherries, Peaches and Currants. There were also some fruit trees in pots in the exhibit of the Versailles Horticultural College. In both exhibits were to be seen the Cherry Bigarreau Antoine Nomblot, well cropped with fruits.

A number of exhibits illustrating the art of the florist were noted. M. Debrie, a Paris florist, showed a pretty decoration for a buffet, intended for a celebration of the bestowal of the "Legion d'Honneur"—a mirror table decorated with red Roses and silver spangles; as a background were white Phalaenopsis blooms and red Cattleyas. M. Dijon, also of Paris, showed some miniature gardens, including a reproduction of the colonnades of the Parc Monceau and of the Médicis fountain in Paris. M. Baumann, of the same city, showed a florists' shop in modern style with baskets of Roses and Sweet Peas.

Vegetables were represented by, among others, the firm of Vilmorin-Andrieux et Cie, their collection being very complete, and arranged as usual with the utmost taste. The Seine Gardeners' Mutual Benevolent Society showed a collective exhibit of vegetables of which the examples were well varied.

The exhibition was completed by a number of interesting collections of gardening tools and sundries, by plans and water-colour drawings of gardens both finished and in course of construction, and by a little "Salon" of paintings of gardens and flowers.

Awards.

The Grand Prix d'Honneur given by the President of the Republic was awarded to MM. Vilmorin-Andrieux et Cie for their exhibit in general. The following Certificates of Merit were awarded for new plants by the various Committees of the Society:—

To MM. Cayeux et Le Clerc, of Paris, no fewer than eleven Certificates of Merit for garden Irises:—*Zingarella*, large flower, dull reddish-brown, lower divisions deeper; *Raboliot*, large flower, deep violet brown; *Pluie d'Or*, large flower, pure yellow; *Don Juan*, to which was awarded the prize of the Commission for the finest Iris of the year, lower divisions of a rich deep brown colour; *Evolution*, pretty colouring, a mixture of violet and yellow; *Paladin*, large violet flower, lower divisions darker; *Oziadée*, large flower, pale violet-blue; *Phèdre*, large pale violet flower, lightly "smoked," lower divisions darker; *Ensorceleur*, very large flower, divisions pale blue, delicately striped and marked; and *Francheville*, upper divisions "smoked," lower divisions deeper.

To MM. Vilmorin-Andrieux et Cie, of Paris, three Certificates of Merit for Irises:—*Fra Angelico*, large flower, smoked noisette yellow, lower divisions violet; and two unnamed seedlings, *J.* 24 and *H* 21, both in tones of pink, the second with a flower not very large but of a particularly fresh colour.

To M. Henri Cayeux, of Le Hâvre, two Certificates for Hydrangeas:—*Rosabelle*, very large, bright pink inflorescence; and *Merveille*, of the same type, but deeper.

To MM. Mouillère et fils, Vendôme, three Certificates for Hydrangeas:—*Rochambeau* and *Gloire de Vendôme*, deep pink; and *Louis Sauvage*, paler pink.

To M. Travouillon-Buret, Tours, for *Hydrangea Madame Faustin Travouillon*, a very pretty bright pink.

Some new Roses were also presented:—

By MM. Lévèque, of Ivry:—*La Maréchale Pétain*, beautiful crimson pink (raiser, Sauvageot and editor Francois Guillot); *Li-Bures* (raiser Pedro Not), semi-double flower, exterior petals washed with red on an orange ground, the centre salmon-pink.

By MM. Moser et fils, Versailles:—*Souvenir de Jules Gaujard* (raiser Pernet Ducher), Pernetiana, a beautiful deep pink, lightly tinted with yellow; *Madame Queuille* (raiser Pernet Ducher), large pink flower strongly shaded with yellow; *Georges Perdoux* (raiser Barbier), a pretty pink apricot tint.

Several Certificates of Merit were also awarded for Orchids.

To M. Marcoz, of Brunoy, for *Cattleya Fanny Heldy* (Laelio-Cattleya Edouard VII × C. Mossiae), very large flower, colour a clear lilac-pink, labellum undulated and curled; purplish-red, the throat yellow.

To M. Guttin, Argenteuil, for *Cattleya Madame Jean Guttin* (C. Gaskelliana × Canhamiana). *A. M.*

MARLOW AND DISTRICT CHRYSANTHEMUM.

The members of this Society recently paid a visit to Wittington and thoroughly enjoyed the beautiful plants grown on the fine rock garden. The party was conducted by Mr. W. E. Mott, Lord Davenport's Gardener.

ROYAL HORTICULTURAL.

June 19 and 20.—The fortnightly meeting of the Royal Horticultural Society, which was held at Vincent Square on these dates, was the last of the two-days meetings of the Society until the Autumn Show. The hall was well filled with floral exhibits but, no doubt, owing to the many other engagements, the attendance was smaller than usual. There were fewer Orchids than of late and the Committee recommended one First Class Certificate and three Awards of Merit to novelties. Paeonies, Delphiniums, alpines and Carnations were freely displayed, and the Floral Committee recommended seven Awards of Merit to novelties, and selected three Delphiniums and a Zonal Pelargonium for trial at Wisley. The competition for the third of the Silver Cups presented by Mrs. Edward Harding, for Paeonies, did not attract great competition. There was no exhibit before the Fruit and Vegetable Committee.

Orchid Committee.

Present: Sir Jeremiah Colman, Bt. (in the chair), Mr. Gurney Wilson (Hon. Secretary), Mr. Fred J. Hanbury, Mr. Lionel de Rothschild, Mr. S. W. Flory, Mr. A. Dye, Mr. F. K. Sanders, Mr. A. A. McBean, Mr. J. C. Cowan, Mr. R. Paterson, Mr. T. Armstrong, Mr. R. G. Thwaites and Colonel Stephenson R. Clarke.

First Class Certificate.

Dendrobium sp.—This plant received this award subject to its being named. The Dendrobium shown was a magnificent specimen, of the D. thyrsiflorum type, with two magnificent drooping spikes of closely packed flowers, each about one-and-a-half inch across, and creamy-white in colour, the lip being golden-yellow, with a fringed margin. Shown by Mrs. Carl Holmes (gr. Mr. W. G. Penton), The Node, Welwyn, Herts.

Awards of Merit.

Miltonia Sanderiana var. June (*Bleuana × St. Andre*).—A lovely and distinct variety with rose-purple blooms, the lower lip being slightly paler, with white at the base, and a yellow disk. Shown by Messrs. Black and Flory.

Miltonia Lyeana var. gigantea (*Princess Margaret × Lord Lambourne*).—A fine white-flowered variety, the top petals being recurved, rose-purple, with white margins; the lower ones are white, splashed with rose-purple, while the eye is golden-yellow. Shown by Mr. R. Paterson, Stonehurst, Ardingley, Sussex.

Miltonia Gattonensis, Stonehurst var. (*Bleuana × Charlesworthii*).—An attractive variety with large, fine white blooms, which have central disks of orange-red. Also shown by Mr. R. Paterson.

Groups.

The number of exhibits in this section was limited to three, and these were only small collections. However, that arranged by Messrs. Stuart Low and Co. contained several choice sorts, notably several good plants of Cattleya gigas and the lovely Laelio-Cattleya Domas. There were several Miltonias, including M. Charlesworthii, and Odontiodas, such as O. Lutetia, O. Grenadier and O. Idoenea; while other novelties included Odontoglossum cordatum; the narrow-leaved Maxillaria tenuifolia; the vivid orange-flowered Epidendrum vitellinum majus, and a few Cypripediums.

Messrs. Charlesworth and Co., Ltd., staged a mixed collection which included the choice Cattleya Ivorine, pure white with a rosy-purple marked lip; Odontioda Brennus, O. Acis, O. Royal Gem and O. Charlesworthii atropurpurea, with deep rich crimson, paler-lipped blooms. Miltonias were represented by M. Isabel Sanders, M. Lena and M. William Pitt; while there were also several beautiful Odontoglossums, including O. armainvillierensis × xanthotes, O. crispum, O. Methabiano, and a heavily-flowered plant of O. Felicity.

Messrs. Sanders staged a few choice plants, including Cypripedium argenteum, Laelio-Cattleya Lilias, creamy-yellow with a purple lip; Cattleya Warneri alba, Jules Hye's var., white with a cream-tinted lip; Odontioda Chanticler var. conspicua, vivid orange-crimson; Rhyncostylis retusa, with a compact hanging spike of small purple and white flowers, and Aerides Fieldingii.

Floral Committee.

Present: Section A.—Mr. Henry B. May (in the chair), Mr. J. F. McLeod, Mr. Arthur Turner, Mrs. Ethel M. Wightman, Mr. William Howe, Mr. J. M. Bridgeford, Mr. D. Ingamells, Mr. A. E. Vasey, Mr. J. T. West, Mr. W. B. Gingell, Mr. Donald Allan, Mr. D. B. Crane, Mrs. Helen Lindsay Smith, Mr. G. W. Leak, Mr. E. R. Janes, Mr. Frank Ladds, Mr. Courtney Page and Mr. W. D. Cartwright (Secretary).

Section B.—Mr. Gerald W. E. Loder (in the chair), Sir William Lawrence, Bt., Mr. G. Yeld, Mr. T. Hay, Mr. Charles T. Musgrave, Mr. R. C. Notcutt, Mr. C. Williams, Mr. E. H. Wilding, Mr. L. R. Russell, Mr. W. B. Cranfield, Mr. A. Bedford, Mr. George Harrow, Mr. F. G. Preston, Mr. G. Reuthe, Mr. James Hudson, Mr. W. J. Bean, Mr. Clarence Elliott and Mr. N. K. Gould (Secretary).

AWARDS OF MERIT.

Eremurus Highdown Gold.—This is a handsome spike of E. Bungei parentage. The flowers are of pale orange-buff colour. Shown by Major F. C. Stern, Highdown, Goring-by-Sea.

Escallonia Donard Brilliance.—The parentage of this hardy evergreen shrub was given as E. langleyensis × a dark seedling. The sprays were of a graceful habit and well-furnished with dark crimson flowers. Shown by the Donard Nursery Co.

Paeonia sp.—The award is subject to the plant being named. The flowers are large, single, round and of shining dark ruby colour, with a small cluster of golden stamens. The segments are of good substance and if, as we imagine, the flowers last well, it is a very desirable border plant. Shown by G. P. Baker, Esq., Hillside, Sevenoaks.

Platytheca galioides.—The award was given to this greenhouse shrub under the old garden name of Tremandra verticillata. It is a native of south-west Australia, and was introduced in 1845. It is a monotypic genus, and the plants thrive under the conditions usually afforded to greenhouse Heaths. The short, narrow leaves are in whorls. The blue flowers, which are borne on short stalks, are short-lived, but they are freely produced in succession, and the flowering season is considerable. Shown by Messrs. Stuart Low and Co.

Papaver orientale Fortunei.—A very pretty Oriental Poppy of medium size. The flowers are of rosy-carmine colour, and the plants appeared to be very free-flowering. Shown by F. W. Copeland, Esq., Shirley, Southampton.

Pentstemon glaber.—This species was introduced so long ago as 1811, and is illustrated in *Bot. Mag.*, t. 1,672 as Pentstemon glabra. The shining leaves are ovate-lanceolate, and the flowers shown were of reddish-purple colour, but it is a rather variable species, and they may be also purple, violet or blue in colour. Shown by Lady Byng of Vimy.

Rhododendron Sheila Osborn.—The parentage of this handsome seedling was given as R. discolor × R. Stratagist. The trusses were large and shapely, and the widely-opened flowers are bright pink outside and paler within. The margins of the flowers are prettily waved. Shown by the Director, Royal Gardens, Kew.

FOR TRIAL AT WISLEY.

Delphinium Knight of Somerset.—A tall, shapely spike of dark blue flowers. Shown by Messrs. J. Kelway and Son.

Delphinium Mrs. Newton Lees.—A handsome spike of large, round flowers with two rows of pale blue and lavender flowers. This and the following were shown by Messrs. Blackmore and Langdon.

Delphinium Philip Butler.—This fine variety also has two rows of petals. The colour is dark blue.

Pelargonium William Bateson.—A Zonal variety recommended for greenhouse cultivation. The leaves are leathery and shining. The trusses of single flowers are rather congested. The colour is a bright salmon, and the petals are deeply toothed. Shown by Sir William Lawrence, Bt., Burford, Dorking.

GROUPS.

A large table space was filled by Messrs. Blackmore and Langdon with a collection of very handsome spikes of Delphiniums. The dark varieties included Purple King and Mrs. H. Kaye, and amongst the light blues were Norah Ferguson and Mrs. Townley Parker. A good group of Delphiniums, with several vases of Sidalceas, was staged by Mr. T. Carlile. His Delphiniums included Evelyn M. Cole, Mrs. Townley Parker and Barbara Thomas.

Irises of particularly good quality were grouped by Messrs. Barr and Sons. The squalens type was especially prominent, and included the varieties Robert Burns, Montezuma and Minnehaha. They also showed good spikes of Campanula Telham Beauty.

On a large floor space, Messrs. M. Prichard and Sons grouped Tritomas, Irises, Hemerocallis, Verbascums and Delphiniums. Mr. G. W. Miller had an extensive collection of border plants on the tabling where he showed many varieties of Paeony, Pyrethrum and Delphinium. Messrs. Tuckers displayed Verbascums, double-flowered Rocket and Campanula garganica hirsuta.

Border flowers were also shown by Mr. Stephen Sims, Messrs. B. Ladhams, Ltd., who had several good varieties of tall Campanulas, Messrs. D. Stewart and Sons, Messrs. E. J. Redgrove and Son, Messrs. William Wood and Son, who included good batches of Erigeron and Paeonies; Messrs. Hollamby's Nurseries; Messrs. C. H. Bloom and Son, Mr. H. Longford and Messrs. J. Kelway and Son, who staged Delphiniums in the Orchid Annexe. Messrs. Sutton and Sons showed an excellent strain of Iceland Poppies in many delightful shades of colour. The Central Garden Supplies Co. had a good group of Kalmia latifolia.

There were numerous exhibits of rock gardens and alpines. With some of his hardy Ferns, chiefly varieties of the Hart's Tongue Fern, Mr. Amos Perry attractively set out various species and varieties of Calochortus, Allium, Iris Forrestii and many other bulbous plants. Rock garden exhibits were also made by Messrs. Waterer, Sons and Crisp, Mr. F. J. Wood, Mr. Gavin Jones, the Misses Hopkins, Messrs. Maxwell and Beale, Messrs. W. H. Rogers and Son, Mr. J. Robinson and the Merivale Nurseries.

A large group of splendidly grown plants of Clerodendron fallax was arranged by Messrs. J. Carter and Co. Messrs. L. R. Russell, Ltd., had various Liliums, foliage Begonias, Cannas and Adiantum Farleyense. Lady Juliet Duff (gr. Mr. H. Weaver), Coombe Court, Kingston Hill, showed many well-grown plants of Crassula coccinea. Messrs. Stuart Low and Co. set up a good group of Platytheca galioides.

In a corner group by the Tea Annexe, Mr. J. Stevenson had a very good collection of Sweet Peas, which included such of his new varieties as Charm, glowing red-cerise; Honour, rich deep crimson; Lilac Time, lavender lilac; and Treasure, rich deep mauve. New Sweet Peas were also shown by Messrs. Dobbie and Co., who had large vases of Reflection, mauve shades; Idyl, rich pink; Kitty Pierce, pale cream-pink; Flamingo, of glowing colour; and Winnie Morse, cream, lightly tinted.

The third of the three Cups presented by Mrs. Edward Harding for the best exhibit of three flowers of each of six varieties of Paeonies, shown by amateurs, was competed for at this meeting, and the Cup was awarded to Mr. W. B. Cranfield, East Lodge, Enfield Chase, who showed fine blooms of Orion, Mons. C. Leveque, Lady Carrington, Madame Duroffle, Felix Crousse and Claire Dubaise.

As second and third prizes in this competition, Banksian Medals were offered by the R.H.S., and these were won by Sir William Lawrence, Bt., Burford, Dorking, and Major G. Churcher, Beckworth, Lindfield, Sussex.

Sir William Lawrence, Bt., showed Cythera, albiflora rosea, Festiva maxima, Marie, Madame Duroffle and Princess Mary; while Major Churcher exhibited examples of Suzette, Primevere, Karl Rosenfield, Etendard du Grand Homme, and Mons. Jules Elie.

Paeonies were one of the chief features of this meeting, for there were several spectacular and well arranged groups of these seasonable flowers, including a magnificent bank of blooms set up by Messrs. G. Bunyard and Co. In this exhibit were vases of the double-flowered Reine Hortense, with flesh-pink, feathered petals; and the paler-coloured La Tendresse, while other good pink sorts were Lady A. Duff, Konigin, Wilhelmine, of a rather deep shade; Rachel and Albert, Crousse; L'Eclatent, with flaming purplish-red blooms; David, deep rose with apricot-tinted central petals; the creamy-white alba superba; the single, rich crimson-scarlet Munitor; the lovely, cream-coloured Duchesse de Nemours (Snowball); and deep rose, Comte de Paris, were merely a few of the most striking in this admirable group.

Another really magnificent group, of huge dimensions, was staged by Messrs. J. Kelway and Son. The most prominent variety was Kelway's Lovely, with huge flowers of deep rose; while there were large baskets of such lovely sorts as Kelway's Queen, Onlooker, Fairy Queen, James Kelway, Lady Alexandra Duff, Beautiful, a novelty with purplish-rose flowers; Portia, and the distinct Globe of Light; while another novelty was His Majesty, with deep crimson outer petals, the central ones being narrow and red in colour.

Another collection came from the Baggesen's Nursery, the varieties of note being Madame Calot, Modeste Guerin, rubra Triomphans and Princess Mathilde.

A small but attractive Carnation group was set up by Messrs. Allwood Brothers, the choice varieties being Maud Allwood, Laddie, Shot Silk, Boston Ward, Wivelsfield Copper, in fine form; Mikado, Maine Sunshine, and the lovely Malmaison Delicata. There were good blooms of Eldora, sweetly scented; Velvet, Wivelsfield Claret Improved, Topsy and Wivelsfield White. There were mixed vases of hardy border sorts, and several well-flowered plants of Allwoodii alpinus varieties.

Messrs. Stuart Low and Co. arranged a small group that included White Pearl, Topsy, Lady Hindlip, spectrum, Brilliant, Orange Sunstar and Ruby Glow, all in excellent condition; while Messrs. C. Engelmann, Ltd., included in their exhibit choice flowers of such good varieties as White Enchantress, Katja, Topsy, Coral Glow, Laddie, Citron and Mrs. Hamilton Fellowes, to mention but a few of the most attractive.

Roses, mostly species, were exhibited by Messrs. G. Bunyard and Co., who showed, amongst other sorts, R. gallica Tuscany, R. glutinosa, R. amurensis, R. cinnamonea, R. Oakeana, R. rugosa delicata, R. Moyesii, and the Bourbon Rose, Madame Pierre.

Included in Mr. J. H. Pemberton's group were choice blooms of Cupid, Vanity, The General, Isobel, Mrs. Henry Morse, Golden Emblem, and the striking species, R. Moyesii.

Fruit and Vegetable Committee.

Present: Mr. C-G. A. Nix (in the chair), Mr. J. Cheal, Mr. A. Poupart, Mr. H. H. Hall, Mr. A. W. Metcalfe, Mr. E. Neal, Mr. G. F. Tinley, Mr. W. F. Giles, Mr. W. H. Divers, Mr. F. Bostock and Mr. A. N. Rawes, Secretary.

There was no business of any description before this Committee.

GRAND YORKSHIRE FLOWER SHOW AND GALA.

The sixty-sixth floral and musical exhibition known as the York Gala, was held on Tuesday, Wednesday and Thursday, June 19, 20 and 21, at Knavesmire, York. This is a comparatively new site, and one that was granted by the Corporation of the City of York when the old Society had to remove from Bootham Park, which lies on the other side of the city. Since the Corporation took a keen interest in this old annual event, the Committee has changed its personel. Some of the older officials have passed away, notably Mr. Hodgson, Mr. Bushell and Mr. Anderson, a former Secretary. Old visitors sadly miss old faces, but one of the old regime remains in the person of Mr. Melrose who, all being well, will reach his hundredth birthday this year. He is still alert in mind and body, was present at the luncheon on the opening day, and proposed "The Exhibitors and Judges"—he is a wonderful old gentleman and a great institution in the City of York. The new Secretary, Mr. Percy Mennim, has a thorough grasp of his duties, while Mr. G. T. Johnson, Chairman of the Floral Committee, has already made many friends in the horticultural world by reason of his tactfulness and geniality.

Although the exhibition held this year was not so large as those held before the war, at Bootham Park, it was nevertheless an extensive and brilliant one, and filled two very large marquees to the limit of their capacity; indeed, if entries continue to improve, the Society will have to provide additional space. On this occasion there was a distinct departure from the old arrangement, inasmuch as the show was opened on Tuesday instead of a Wednesday. A year ago, York was the venue of a great ecclesiastical celebration, and one of the centres from which the great eclipse could be seen; this year the show was held during a widely advertised civic week, the whole city was *en fête*, and even the tramcars were decorated with bunting. On the eve of the show there was a historical pageant and procession, demonstrating the various periods and special events in connection with the history of this ancient city; unfortunately, the weather was unkind, but there was an improvement in the early hours of the following morning, and the opening day of the show was warm and fine.

Hardy flowers, alpine gardens, Roses, Sweet Peas, Begonias, Carnations and plant groups were the leading features. Outstanding noncompetitive groups were those of fruit trees in pots—Peaches, Nectarines, Cherries, Figs and Plums—from Messrs. T. Rivers and Sons; gorgeous Sweet Peas from Messrs. Dobbie and Co.,; stove and greenhouse plants from Messrs. John Peed and Son; vegetables from Lord Leconfield, and the big rock and water garden arranged by Messrs. Backhouse's Nurseries.

Groups.

The competition was not very keen in the class for a group of miscellaneous plants arranged for effect on a space not exceeding three hundred square feet. Mr. T. M. Petch, Great Horton, Bradford, secured the premier award of £20 with a pleasing exhibit in which Codiaeums, Palms, Clarkias, Hydrangeas, Alocasias, Begonias, Ferns and Clerodendron fallax were well arranged. Mr. W. A. Holmes, Chesterfield, won the second prize, and his design contained an arch decorated with Palms, Coleuses and drooping Fuchsias, while the foreground was composed of Codiaeums, Dracaenas, Hydrangeas, Lilium longiflorum, Spiraeas, Ixoras, Begonias and brilliantly-coloured Coleuses.

For the best collection of plants, in or out of bloom, arranged for effect on a space of sixteen feet by six feet, the positions were reversed, Mr. Holmes taking the first prize and Mr. Petch the second. Mr. Holmes used tall Codiaeums with great effect, and associated these with Dracaenas, Carnations, Grevilleas, Coleuses, Fuchsias, Lilies and Begonias.

In the open class for a group of plants arranged for effect on a space twelve feet by six feet, there were five entrants. Mr. W. A. Holmes was again the premier prize winner, and made good use of Codiaeums, Palms, Hydrangeas, Coleuses, Bamboos and Begonias; second, Arnold S. Rowntree, Esq. (gr. Mr. J. Armes), Chalfonts, York, who made a feature of fibrous and tuberous Begonias, Cupheas, Coleuses and Gloxinias; third, the Clifton Fruit and Flower Growers Co., Clifton, York.

Dr. P. Macdonald (gr. Mr. E. Bennett), Ouse Lea, Clifton, York, had the best group of Calceolarias, and made a capital display of these useful greenhouse plants; second, Mr. W. Watson, The Nurseries, York.

The best group of Gloxinias was shown by Lady Cunliffe Lister (gr. Mr. Bernard Gray), Swinton Park, Masham, Ripon; second, Messrs. Padgett and Watson. Messrs. Padgett and Watson led in the class for a group of Gloxinias.

Begonias were superbly shown by Messrs. Blackmore and Langdon, who quite easily won the first prize for a group of these gorgeous plants. They put up a grand group of splendid plants of magnificent varieties, a few of the finest being Mrs. E. Ramsden, Lady Ann, General Allenby, Mrs. H. Moncrieff, Hilda Langdon, Mrs. F. Hodges, Mrs. Peter Blair, Mr. O. C. Calthorp and the pendulous varieties, Betha, Lettie, Eunice, Glow and Stella—all in baskets. Messrs. Padgett and Watson secured the third prize, but we did not discover the winners of the second prize.

Rock Gardens.

Messrs. A. Greenwood and Co., Wetherby, won first prize for a rock garden, with alpine plants only, arranged on the ground in a central position, in a space twenty feet by fifteen feet, no digging permitted. There were several exhibitors and their arrangements served to show what can be done in a small garden without the use of great masses of stone, and without the aid of water or the need of deep excavations.

Messrs. A. Greenwood and Co. had a very pleasing and simple design—a little valley between two small hills—furnished with Veronicas, Violas, Campanulas, Achillea tomentosa, Sedums, Primulas and Saxifragas; second, Mr. S. Gardner, Pool, Leeds, who used dwarf Conifers, Sedums, Primula sikkimensis, P. helodoxa, Viola Golden Wave and Saxifrages to great advantage; third, Mr. C. Smith, Hardy Plant Nursery, Keighley.

Messrs. A. Greenwood and Co. were also placed first in the class for an ornamental rock garden, furnished with hardy fruits and flowers, with or without water, a space of thirty feet by twelve feet being allowed. This firm provided a background of Conifers, and had a little pool of water in the foreground; Astilbes, Primula sikkimensis, P. pulverulenta, Campanulas and Rock Roses were the more prominent plants used; second, Mr. P. Gardner, Craven Nurseries, Ilkley, who had Cytisus in variety in the background, and made good use of Astilbes, Primula helodoxa, P. sikkimensis and Violas in the foreground; third, Messrs. C. H. Bloom and Co., Oakington, Cambridgeshire.

Hardy Flowers.

The displays of hardy flowers have now become one of the great features of the York Show; these interest the public and provide splendid masses of grace and colour.

The chief class in this section was for a collection of hardy perennials, including Liliums and other hardy bulbous plants, or cut flowers, Roses excluded, arranged on a space not exceeding three hundred square feet. These groups faced all ways. Messrs. Bees, Ltd., Liverpool, led with a very bold and beautiful exhibit of finely-grown flowers of Delphiniums Blue Bird and Mrs. Townely Palmer, Paeonies Madame C. Calcot, festiva maxima and Madame Leveque, Oriental and Iceland Poppies, bearded and Spanish Irises, Lupins, Pyrethrums in variety, Gaillardias and other fine garden plants; second, Messrs. Harkness and Co.; third, Messrs. G. Longster and Sons; fourth, Messrs. G. Gibson and Co.

Lupins were another fine feature, and the several groups were a great attraction. Messrs. Harkness and Sons, Bedale, led for a group arranged on a space not exceeding a hundred square feet, and showed a beautiful set of spikes in cream and yellow, mauve and blue, blue and white, fawn, chamois, rose and purple; the variety named Mrs. Walker was particularly fine; second, Messrs. Gibson and Co., Leeming Bar; third, Mr. G. Rosell, York, who showed fewer, but very fine spikes.

Messrs. Bees led in the class for a collection of hardy flowers arranged in a space of eighteen feet by seven feet, and showed grand flowers of Paeonies, Delphiniums, Poppies, Gaillardia Robin Hood, Irises and Kniphofias; second, Messrs. G. Gibson and Co.; third, Mr. S. Gardner.

Messrs. Bees were also the leading prize winners for two dozen bunches of hardy flowers in not fewer than a dozen distinct varieties, and here they showed, in their usual fine style, blooms of Gaillardia Robin Hood, Sweet William Pink Beauty, Iris Knysna, Lilium umbellatum, Paeonies and Spanish Irises; second, Mr. J. D. Hutchinson, Kirby Moorside.

Orchids.

These plants were shown in considerable quantity and variety and made a goodly display.

J. McCartney, Esq. (gr. Mr. C. T. Potts), Hey House, Bolton, was a good first prize winner in the class for a dozen Orchids, his best plants including Brasso-Cattleya Veitchii, Cattleya Mossiae Wagneri, and Laelio-Cattleya Canhamiana Rex. Messrs. A. J. Keeling and Son were second with good examples of Odontoglossum plumptonense, O. Minatour, Odontioda Rosefieldense, and Miltonia Lena.

For a table group of Orchids, Messrs. A. J. Keeling and Sons led with a very bright exhibit that contained Cypripedium Curtisii Sanderae, Odontioda Charlesworthii, Miltonia Mona, Cypripedium cardinale, with Laelio-Cattleyas, Brasso-Cattleyas and Odontoglossums in variety; J. McCartney, Esq,, second, showing Odontoglossum Williamsianum in fine form and Epidendrum prismatocarpum, etc.

Mr. J. McCartney led for six Orchids, his set including Odontoglossum Sheila and Odontioda Bradshawiae; Messrs. A. J. Keeling and Sons second. The latter firm led for three Orchids with Odontoglossum Williamsianum, Laelio-Cattleya Canhamiana rosea with fifteen flowers and Brassia verrucosa with seven fine spikes; Mr. McCartney second.

In another class for six Orchids, J. McCartney Esq., won first prize with Epidendrum vitellinum majus, Laelio-Cattleya Canhamiana and Brassia verrucosa, and he had the best single Orchid, a fine example of the old Aerides odoratum, with three spikes of fragrant flowers.

Mr. McCartney led again in another class for three Orchids (made up plants not allowed), and for a single specimen under similar conditions, with the lovely Laelio-Cattleya Canhamiana amoena.

Roses.

These flowers were shown in capital condition, having regard to the unkind weather experienced of late. Mr. Elisha J. Hicks had the best collection of Roses, and Mr. George Prince secured second honours. For a table of Roses, Mr. Prince led, and showed fine flowers of I. Zingari, Golden Ophelia, Lady Roundway, Dr. Van Fleet and Irish Fireflame. Mr. Hicks and Messrs. Jarman and Co. secured the other awards.

Mr. Elisha J. Hicks led for twenty-four Roses, showing Mabel Morse and Mrs. F. Roberts in fine form; second, Mr. George Prince; third, Messrs. Jarman and Co. Mr. G. Prince won first prize for thirty-six blooms with a very bright set that included R. E. West, Angele Pernet and Mrs. H. Stevens; second, Mr. Elisha J. Hicks; third, Messrs. Jarman and Co.

The best set of four dozen Roses in not fewer than twenty-four varieties, was shown by Mr. Elisha J. Hicks, whose leading flowers were of Mabel Morse, Lady Craig, Lady Inchiquin and White Maman Cochet; second, Messrs. Jarman and Co.; third, Mr George Prince.

Mr. Elisha J. Hicks secured the chief award for seventy-two Roses, and was followed by Messrs. Jarman and Co., both firms showing well for so early in the season.

Messrs. Jarman and Co., Mr. Elisha J. Hicks and Mr. George Prince were placed as named for eighteen Roses, while for twenty-four blooms; Mr. Prince, Messrs. Jarman and Co. and Mr. Hicks won in the order mentioned. Mr. G. W. Reader, Naburn Ferry, York, led for a dozen Rose blooms, followed by Mr. W. Hutchinson, Kirby Moorside.

Floral Designs.

Mr. F. H. Ward, Clifford Street, York, was very successful in this section, winning first prizes for a hand-basket of flowers (Golden Arums and yellow Irises); for a hand-basket of flowers (Orchids allowed), with Golden Ophelia and Richmond Roses; for a bowl of flowers (red and pink Carnations); for a bowl of Roses (Golden Ophelia); for a single bouquet (blush Carnations); and for two hand-baskets, one of yellow and the other of heliotrope Carnations.

Messrs. Backhouse's Nurseries had the best bride's bouquet, composed of white Odontoglossums and Lily-of-the-Valley; and showed the best bridesmaid's bouquet, composed of coloured Odontoglossums. Messrs. Padgett and Watson and Mr. Thorpe also won several awards in this section.

Mr. F. H. Ward showed the best decorated dining table, and his arrangement included Grapes, Plums, Melons, Apples and pink Carnations; Captain E. R. Compton (gr. Mr. A. Mason), Newby Hall, Ripon, second, with Peaches, Nectarines, Figs, Grapes and Carnations; third, Mr. W. C. Thorpe.

Plants.

Mr. W. Hutchinson staged the best set of eight Calceolarias, showing well, and was followed by Mrs. G. Mellington, York, and Mr. J. H. Jubb, Snaith.

Major F. A. Robinson (gr. Mr. H. Lund), Aldersyde, Dringhouses, led for eight Begonias; second, A. Rowntree, Esq.; third, A. E. Hewitt, Esq., St. George's Place, York (gr. Mr. W. Fletcher).

Vegetables.

Lord Leconfield (gr. Mr. Streeter), Petworth Park, Petworth, was the only exhibitor of vegetables, and won first prizes for a collection of six kinds, for Cucumbers (Improved Telegraph), Tomatos (Webb's Conqueror), and Melons (Hero of Lockinge).

Awards of Merit.

Begonia Lady Ann.—A large-flowered variety of beautiful form and lovely soft pink colour.

Begonia Mrs. E. Ramsden.—A splendid large-flowered variety of rich orange-salmon shade. Both these were shown by Messrs. Blackmore and Langdon.

Delphinium Mrs. Newton Lees.—A fine variety with large, circular flowers, borne in a massive spike; colour, soft mauve, with dark centre. Shown by Messrs. Blackmore and Langdon.

Delphinium Maharajah.—A very attractive rich, bright blue variety, with light centre; Shown by Messrs. Kelway and Son.

Medal Awards.

Large Gold.—To Lord Leconfield (gr. Mr. Streeter), Petworth Park, Petworth, Sussex, for vegetables; Messrs. Kent and Brydon, for formal Iris and herbaceous garden; Messrs. T. Rivers and Son, Ltd., for choice fruit trees in pots; Messrs. Backhouse's Nurseries, for rock and water garden; Messrs. Dobbie and Co., for Sweet Peas; and to Messrs. J. Peed and Son, for greenhouse plants.

Gold.—To Messrs Allwood Brothers, for Carnations and Dianthus Allwoodii; and Messrs. E. Webb and Sons, for greenhouse plants and flowers.

Silver Gilt.—To Messrs. C. Engelmann, Ltd., for Carnations; Messrs. Winn Brothers, for sunken garden and rock garden; Messrs. J. Kelway and Son, for Delphiniums and Paeonies; Messrs. Blackmore and Langdon, for Delphiniums; Messrs. W. H. Simpson and Sons, for Lupins and other hardy flowers; Messrs. Wilson and Agar, for Roses, hardy flowers and alpines; Mr. W. Wells, junr., for hardy flowers; Messrs. Backhouse's Nurseries, for alpines; and to Messrs. Bakers, for hardy flowers.

Silver.—To Messrs. Maxwell and Beale, for alpine plants; Mr. H. Ellison, for Ferns; Messrs. Kent and Brydon, for alpines; Mr. A. F. Dutton, for Carnation Mrs. A. J. Cobb; Mr. R. V. Rogers, for alpines; Messrs. B. Ladhams, Ltd., for hardy flowers; Messrs. Daniels, Brothers, for Bearded Irises; and to Mr. E. Clegg, for Violas.

BRITISH FLORISTS' FEDERATION.

Mr. John Artindale, President, presided at the recent meeting of the Council of The British Florists' Federation, 5, Tavistock Street, Covent Garden.

Many items of special interest were considered, and it was agreed to join the Horticultural Trades' Association in support of cases in opposition of findings of certain authorities concerning the revaluation and assessment of glasshouses in nurseries and market gardens.

Imports of foreign flowers provided material for lengthy discussion, regrets were expressed that the Chancellor of the Exchequer had not seen fit to impose a duty on imported flowers, but it was agreed that the matter be pursued further, and action was proposed in another direction in which assistance had been promised.

Action was also taken in regard to railway charges for the conveyance of flowers and plants.

The draft report of the British Committee of the Ghent Show was presented, considered and accepted with certain amendments, and it was agreed that so soon as matters can be cleared up the copy of the report and accounts shall be sent to the Horticultural Press, to all donors of plants and flowers, to all subscribers to the Fund and to all who rendered voluntary assistance. It was also agreed, having regard to the fact that the B. F. F. had profited by several displays it had made at Vincent Square, that any deficiency in connection with the accounts of the British Section at Ghent shall be made up by the British Florists' Federation.

GUILDFORD AND DISTRICT GARDENERS'.

The first outing of the season took place on Saturday, May 19, when the members visited the gardens of Mr. Whittall, at Grayswood Hill.

Mr. Grant, gardener to Mr. Whittall, conducted the party around the extremely picturesque estate. The house is situated on a hill commanding extensive views on to dark Blackdown and over far stretching and well wooded undulations of Sussex on to the range at Chanctonbury. The landscape, in its fresh verdure of many shades of green, with the red roof of a house here and there glinting between, made an enchanting scene.

The entire surroundings gave testimony to the owner's love of shrubs and trees. All about the place are many trees gathered from all parts of the world. Amongst the rare trees was a fine specimen of an evergreen Beech, Nothofagus betuloides, another was Pinus muricata, with an immense number of cones, and a Pieris formosa in flower. Well-kept grass plots and lawns, bordered by Tulips, were to be seen everywhere, while about the grounds Azaleas, Magnolias and Rhododendrons in brilliant colours enhanced the natural beauties of this charming place. There is also an extensive and well-stocked rock garden. In the orchard, in which Mr. Whittall takes great interest, is built a large room which served as a refreshment hall. Here tea was provided, and Mr. Stedman expressed the thanks of the visitors to Mr. and Mrs. Whittall for their kind hospitality, and to Mr. Grant for his courteous attendance and service as guide.

GLASGOW AND WEST OF SCOTLAND.

Members of the above Society, numbering nearly one hundred, recently had a most interesting and enjoyable outing on the kind invitation of W. Gilchrist Macbeth, Esq., to inspect the gardens of Dunira, Comrie, Perthshire. The route chosen was by way of Stirling, Bridge of Allan, Dunblam and Crieff, and the fresh green of the trees and fields, along with the early-flowering trees which this year were most profuse in their blossoming, added much to the enjoyment of the journey. Luncheon was served on reaching Comrie, and the party then proceeded the remaining four or five miles to Dunira, where they were met and conducted round the gardens and grounds by Mr. White, gardener, and other members of the staff.

Great interest was shown in the well-appointed glasshouses and their contents, which were all of a very high standard, but the chief attractions were the rock and water gardens, and the lawns and terraces surrounding the mansion. Here were to be seen many plants of interest, and the general scheme showed that much time and money had been spent, so well as sound knowledge of true landscape gardening.

Mr. Gilchrist Macbeth, at the termination of the visit, expressed the hope that at some future time they would again visit Dunira to note the progress that was being made.

A hearty vote of thanks was given, and was suitably acknowledged by Mr. Macbeth, who gave no little credit to his gardener Mr. White, and his assistants.

Obituary.

William Duncan Tucker.—We regret to announce the death of Mr. W. Duncan Tucker, which occurred suddenly at Windermere, on Tuesday, June 12. So long ago as 1881, Mr. Tucker took sole control of the business of glasshouse builders now carried on under the title of William Duncan Tucker and Sons, Ltd. This title was taken in 1906, when the present company was formed, and from that date until his death, Mr. Tucker was governing director. Thus he was associated with the business for a period of fifty-three years, and one employee remains who was with him in 1881. For all his employees Mr. W. Duncan Tucker had the kindliest consideration, and this was reciprocated by real affection and devotion to duty. The deepest sympathy will be felt for the family of the deceased gentleman.

ANSWERS TO CORRESPONDENTS.

Correction.—On p. 421 the names of two exhibitors were given wrongly; they should be Gus Mayer, Esq., Wistler's Wood, Woldingham (gr. Mr. R. Cottam).

Double Flower of Apple Bramley's Seedling.—*A. S. B.* The doubling of occasional blooms on Apple trees is not an uncommon occurrence, but the bloom you sent us is an exceptionally fine example.

Deformed Roses.—*A. H. H. M.* The condition of the Rose buds which you sent us seems to suggest that the bushes have been over-fed and that the soil is probably too rich in plant food. We would suggest that you refrain from applying any more manure for a season or two.

Names of Plants.—*A. C.* Small plant, Claytonia perfoliata; the other plant we do not recognise.—*M. C.* 1, Anthericum (Paradisea) Liliastrum; 2, Lychnis Viscaria splendens.—*L. S.* 1, Cotoneaster microphylla; 2, Hemerocallis flava; 3, Tellima grandiflora; 4, Geranium lancastriense; 5, Centaurea cyanus albus.—*H. F. B.* 1, Anthurium scherzerianum; 2, A. variegatum; 3, Saxifraga sarmentosa; 4, Ficus repens; 5, Helxine Soleirolii; 6, Selaginella Kraussiana; 7, Sempervivum, send when in flower.—*W. S.* Verbascum phoeniceum.—*L. B.* Sempervivum sp., probably S. cuneatum, native of the Canary Islands.—*W. C. M.* Cnicus Benedictus.—*A. S.* 1, Hemerocallis flava; 2, send in better condition. *Subscriber.* Probably Clematis montana rubens.—*J. B.* Rhododendron cinnabarinum.

Communications Received.—L. S.—H. R. T.—S. S.—W. F. E.—H. A. M.—A. G. M.—R. T.—J. G. W.—H. M.—J. F.—H. S.—A. F.—H. G. C.—W. D.—L. C.—H. W. A.

THE

Gardeners' Chronicle

No. 2166.—*SATURDAY, JUNE* 30, 1928.

CONTENTS.

- Alpine garden—
  - Achillea Lewisii .. 465
  - Geranium napuligerum 465
  - Senecio scorzoneroides 465
- Fruit register—
  - Apple Glory of the West 470
  - Apple Melrose ... 470
- Garden notes from South-west Scotland 468
- "Gardeners' Chronicle" seventy-five years ago 462
- Gardeners as "Male Servants" ... 470
- Gardeners, Royal Park, sick pay privileges for 462
- Ideal gardens and plant lore 467
- Indoor plants—
  - Ficus Parcelli ... 463
  - Prostanthera lasianthos 463
- New Hall, the, of The Royal Horticultural Society 466
- New Hall, Royal Horticultural Society's, opening of 461
- Societies—
  - Derbyshire Horticultural 471
  - Manchester and North of England Orchid 471
  - Royal Cornwall Show 472
  - Royal Horticultural 472
  - Three Counties Agricultural Show ... 471
  - United Horticultural Benefit and Provident 471
- Trees and shrubs—
  - Arctostaphylos Uva-ursi 463
  - Euonymus radicans Kewensis ... 463
- Violas, a revision of ... 465
- Vita-glass tests ... 462
- Week's work, the ... 464
- Welsh garden, notes from a 468
- Wimbledon, a new recreation ground for 462

ILLUSTRATIONS.

- Chelsea Show: Fred. J. Hanbury's group of Orchids... 463
- Musgrave, Mr. C. T., portrait of... 462
- Royal Horticultural Society's New Hall 466, 467, 469
- Senecio scorzoneroides 465

Average Mean Temperature for the ensuing week deduced from observations during the last fifty years at Greenwich, 62·1°.

Actual Temperature.—

The Gardeners' Chronicle Office, 5, Tavistock Street, Covent Garden, London, Wednesday, June 27, 10 a.m. Bar. 32. Temp. 65°. Weather, Fine.

Opening of the Royal Horticultural Society's New Hall.

There was a brilliant assembly at Westminster on Tuesday, June 26, when H.R.H. Princess Mary, Viscountess Lascelles, opened the Royal Horticultural Society's New Hall. Lord Lambourne, P.C., V.M.H., President of the Society, presided, and was supported by the present members of the Council:—Lt.-Col. Stephenson R. Clarke, C.B.; Mr. William Cuthbertson, V.M.H.; Mr. Mark Fenwick; Mr. T. Hay, M.V.O., V.M.H.; Mr. G. W. Leak; Mr. G. W. E. Loder, F.L.S.; Mr. G. Monro, C.B.E.; Mr. C. T. Musgrave, V.M.H. (Treasurer); Mr. C. G. A. Nix, V.M.H.; Mr. W. R. Oldham; Mr. J. B. Stevenson; Mr. L. G. Sutton, C.B.E., F.L.S.; and Mr. R. D. Trotter. The R.H.S. Officials were represented by Dr. A. B. Rendle, F.R.S., V.M.H. (Professor of Botany); Dr. J. A. Voelcker, C.I.E. (Hon. Consulting Chemist); Mr. A. E. Clarke and Mr. J. A. Marston (Solicitors); Mr. A. C. Harper and Mr. J. Harper (Auditors); Mr. F. J. Chittenden, F.L.S., V.M.H. (Director of Wisley); Mr. M. A. H. Tincker (Keeper of the Laboratory); Mr. F. R. Durham, C.B.E. (Secretary), and Mr. A. Simmonds, N.D.H. (Assistant Secretary); Viscount Ullswater, G.C.B. (Vice-President); Mr. Cecil Hanbury, M.P., and Mr. C. R. Scrase-Dickens, D.L. (Trustees of the Wisley Gardens). Past members of the Council present were:—Mr. W. A. Bilney, V.M.H., Mr. F. R. S. Balfour, V.M.H., Mr. R. Cory, F.L.S., The Rev. G. E. Engleheart, V.M.H., Mr. F. J. Hanbury, V.M.H., Dr. A. W. Hill, C.M.G., F.R.S., Mr. J. Hudson, V.M.H., Sir William Lawrence, Bt., Mr. H. B. May, V.M.H., Lt.-Col. Sir David Prain, C.M.G., F.R.S., V.M.H., and Mr. R. W. Wallace, J.P., V.M.H.

Distinguished guests who accepted invitations were:—The Rt. Hon. Sir William Joynson-Hicks, Bt., M.P., and Lady Joynson-Hicks; The Rt. Hon. Sir Austen Chamberlain, K.G., M.P.; The Rt. Hon. Sir Laming Worthington-Evans, Bt., G.B.E., M.P., and Lady Worthington-Evans; The Rt. Hon. Sir John Gilmour, Bt., D.S.O., M.P.; The Rt. Hon. Sir Thomas Inskip, C.B.E., K.C., M.P.; The Rt. Hon. Viscount Peel, G.C.B.; The Hon. J. S. Smit (Union of South Africa); Sir A. C. Chatterjee, K.C.I.E. (British India); The Mayor of Westminster; The Bailiff of Westminster; The Rt. Hon. The Lord Muir-Mackenzie, P.C.; General The Rt. Hon. Sir Neville Lyttelton, P.C. (Governor-General of the Royal Hospital, Chelsea); Major-General G. J. Farmar, C.B., C.M.G. (Secretary of the Royal Hospital, Chelsea); Lord and Lady Harewood, The Rt. Hon. Lord Leigh, The Rev. Shepley Smith, The Rt. Hon. The Earl of Mayo, Viscountess Boyne, Mr. G. J. Ingram, Miss Lawrence, Lady Aberconway, The Hon. Mrs. H. D. McLaren, Mr. Merritt, of Messrs. Cluttons, Colonel Lord Henry Seymour, D.S.O., The Rev. Canon Partridge, Mr. H. J. Greenwood, D.L., J.P., and Sir Jeremiah Colman, Bt., V.M.H., and Lady Colman.

Learned and Horticultural Societies were represented by:—Sir Frank Dicksee, P.R.A. (Royal Academy); Mr. Walter Tapper (Royal Institute of British Architects); Mr. W. H. Ansell (Architectural Association); Sir Peter Clutterbuck (Empire Forestry Association); Sir Charles Close (Royal Geographical Society); The Marquis of Headfort (Royal Horticultural Society of Ireland); Sir Daniel Hall, K.C.B., M.A., F.R.S. (John Innes' Horticultural Institution); Sir John Sandeman Allen, M.P. (Royal Colonial Institute); Mr. G. E. W. Beeson (The Worshipful Company of Gardeners); The Master of the Worshipful Company of Fruiterers); Dr. G. T. Moore (Missouri Botanic Gardens); Mr. Courtney Page (National Rose Society); Mr. R. Cory, F.L.S. (National Dahlia Society); Mr. E. H. Christy (National Sweet Pea Society); Mr. C. Engelmann (British Carnation Society); Major G. Churcher (British Gladiolus Society); Mr. Edmund Charrington (National Carnation and Picotee Society), and Viscountess Combermere; Sir William Lawrence (Iris Society); Admiral Heneage-Vivian (Rhododendron Association); Mr. C. H. Curtis, F.L.S. (National Chrysanthemum Society); Mr. A. G. Merryweather (Horticultural Trades Association); and Mr. R. Hayward (Retail Fruiterers' and Florists' Association).

Lord Lambourne presented the following address: — "To Her Royal Highness, Princess Mary, Viscountess Lascelles. May it please your Royal Highness, we, the President, the Vice-Presidents, the Council, the Fellows and Associates of the Royal Horticultural Society, with our loyal duty and greeting welcome your Royal Highness to our New Hall. Just twenty-four years ago, His Majesty King Edward The Seventh, accompanied by Her Majesty Queen Alexandra, and in the presence of a distinguished company gathered to celebrate the Centenary of the Society, declared the then New Hall open, a hall that had been built out of funds generously subscribed by the Fellows. The occasion of the Centenary of the Society was further marked by the establishment of the Gardens at Wisley, through the munificence of Sir Thomas Hanbury, K.C.V.O. How great have been the benefits accruing to the Society since that occasion has been marked by the rapid increase in the Fellowship of the Society from 8,000 to 25,000, and the one care of the administration has been to be ever ready to provide for the needs of the Society in accommodation for its meetings and shows and the extension of its gardens at Wisley without calling on its Fellows and Associates for additional support. While the extension of the Gardens at Wisley from sixty acres to over two-hundred-and-twenty acres has been a gradual growth, it was in 1924 we deemed that the time had arrived to provide this further accommodation for meetings and shows, and this New Hall, which we now ask Your Royal Highness in your goodness to declare open, has been built with a floor area twice that of the Old Hall, and includes additional lecture and committee rooms. The first Charter of the Society, granted by His Majesty King George the Third in 1809, defined the objects of the Society, namely, "The improvement of horticulture in all its branches, ornamental as well as useful." In 1861, and again in 1899, the Society had occasion to make representations to Her Majesty Queen Victoria to grant a new and a supplemental Charter to meet the requirements of the growth of the Society, and at present the Society is petitioning His Most Excellent Majesty King George the Fifth for a new Charter to grant a still further extension of its administrative powers suited to the progressive development of the Society. We view with satisfaction the continued interest in horticulture, not only as a science contributing towards the necessities of life, but also as an occupation contributing towards the social well-being of our country. It is with this in mind that we take the opportunity of expressing our loyal obligation to Their Majesties and to Your Royal Highness for the many visits paid to our Shows encouraging us to continue in our work and, in thanking Your Royal Highness for your presence here to-day, we desire to assure you that your gracious consent to be a Patron of this Society is an honour to be valued by us with pride and satisfaction. As a slight expression of what is to us a very great event, we would take your acceptance of the accompanying work of art as a great honour, namely, a key in nine carat gold ornamented by Messrs. Garrard and Company, and which is a copy of an old French key that was found at the Bastille. It will not open any door as, if it had been made to be useful it could not have been made in gold, but in silver-gilt, and we therefore preferred that Your Royal Highness should have simply an ornamental key and not a useful one."

Before terminating his address, Lord Lambourne announced that His Majesty had granted the New Charter to the Society.

Mr. C. T. Musgrave, V.M.H., Chairman of the Housing Committee, then presented an address:—"To Her Royal Highness, Princess Mary, Viscountess Lascelles. May it please Your Royal Highness, on behalf of the Committee appointed by the Council of the Society to deal with the building of this Hall, I beg humbly to submit the following brief Report. When your Royal Highness's illustrious grandfather opened this Society's Hall in Vincent Square, twenty-four years ago, no one could have foreseen that in a comparatively short time the Society would have outgrown its home and would have required a new one more than twice as large. Yet the growth of the Society has been so rapid and continuous that for some time the accommodation available for all concerned has been inadequate. Six years ago, the Council realised that to enable the Society to continue to fulfil the purpose for which it was incorporated, namely, the encouragement of practical and scientific horticulture, it would be necessary to provide more room not only for the fortnightly meetings, but for the Lindley Library, the staff and the Fellows, whose numbers have increased till they now total over 25,000. Various schemes for the reconstruction of the present hall and offices in Vincent Square were considered, but the expansion of the Society's activities was so continuous and so pressing that the provision of a new Exhibition Hall seemed the most prudent course. This decision having been taken, the Council had to consider the location of the new building, and the form it should take—problems seldom easy of solution and doubly difficult in London. In its choice of a site, the Council was influenced largely by considerations for the convenience of the Fellows, and as Westminster had been found accessible and convenient by the bulk of the Fellows for many years, originally at the Drill Hall in Buckingham Gate, and then at Vincent Square, the Council did not feel justified in breaking the long association of the Society with the City of Westminster. So it followed that in September, 1922, a Committee was appointed to draw up a specification of the requirements of the Council for a new Hall, and to deal with the many and various matters connected with its construction. Simplicity in design, lighting, heating and ventilation were all essential matters for consideration, and the interests and comfort of Fellows, exhibitors and visitors were hardly less important. Designs were invited in accordance with these specifications, and eventually the plans of Messrs. Easton and Robertson were accepted after a model of the proposed building had been submitted to the Director of the National Physical Laboratory. The Council has every reason to be grateful to him for the advice which he gave. In design the Hall is novel, the lighting being mainly from vertical windows instead of from a domed glass roof which has hitherto been the almost universal form of lighting such an exhibition hall. The structure is built of reinforced concrete, giving an appearance of elegance and lightness and in carrying out the work the Council has had the advantage of the expert advice and assistance of Dr. Oscar Faber as its Consulting Engineer. In the administrative block are contained a large lecture room on the first floor immediately above the dais; on the second floor a similar room capable of being partitioned into smaller rooms as required; and on the top floor Committee rooms which will enable the Society's Committees to judge and report on plants, flowers, fruit and vegetables under the most favourable conditions of top north lighting. For the convenience of Fellows and visitors, a restaurant has been provided, together with all the necessary modern appliances for kitchens and offices. Happily, the prosperity of the Society has enabled the Council to face the financial outlay without an appeal to the generosity of the Fellows. The Foundation Stone of the building was laid by our President, Lord Lambourne, on October 19, 1926, and we now humbly beg Your Royal Highness that we may be allowed to record the successful completion of the work, and the event of to-day's opening ceremony on a stone specially provided at the entrance."

Upon the termination of this address, H.R.H. Princess Mary, Viscountess Lascelles, in a few well-chosen words, declared the New Hall open. The following were then presented to Her Royal Highness:- Mr. J. M. Easton and Mr. H. Robertson (Architects); Dr. Oscar Faber (Consulting Engineer); Mr. A. Howell (Clerk of the Works); Mr. W. J. Smith and Mr. H. A. Sowner (Representing the workmen), and several others connected with the construction of the Hall. The band of H.M. Grenadier Guards played a selection of music during the hour previous to the opening ceremony, which commenced just after 3 p.m., and occupied about twenty minutes.

A New Recreation Ground for Wimbledon.—Lady Holland, of Holmhurst, Copse Hill, Wimbledon Common, has offered to present four-and-three-quarter acres of land in West Wimbledon, for use in perpetuity as a recreation ground. This offer has been accepted gratefully by the Wimbledon Town Council. The gift is made by Lady Holland as a memorial of the public services of her late husband, Sir Arthur Holland.

MR. C. T. MUSGRAVE, V.M.H.
Chairman of the R.H.S. Housing Committee.

Legacy to a Gardener.—The late Mr. Leigh Goldie Taubman, of The Nunnery, Douglas, Isle of Man, who died on April 29, bequeathed one year's wages to his gardener, Mr. Charles Flack.

Sick Pay Privileges for Royal Park Gardeners.—The gardeners employed in the Royal Parks, being employees of the Crown, are technically civil servants, but as they are not entitled to pensions on retirement, they are known as "unestablished," and are not on the same footing as regards sick pay as "established" civil servants. In January, 1923, a special Committee of the Civil Service Confederation was appointed to deal with the question of securing sick pay privileges for unestablished civil servants, and after twelve months' negotiation with the Treasury on the subject, a considerable measure of success was achieved. Unfortunately, however, the classes to whom sick pay privileges were thus extended did not include the park gardeners, and the Confederation is still endeavouring to have this class included by the Treasury among those to whom the concession has been made. A meeting of the Sick Pay Committee of the Confederation was held on June 6, 1928, and it was decided that no efforts should be spared to bring the matter to a successful conclusion. It may be added that the privileges in question have been conceded to Foremen employed by the Forestry Commission, and are not ungenerous, consisting of sick leave on two-thirds pay (subject to certain conditions) up to a maximum period of six weeks in twelve months.

Compton Acres.—The Gardens at Compton Acres, Canford Cliffs, Bournemouth, will be open, by kind permission of T. W. Simpson, Esq., on the following dates (Saturdays), on behalf of local charities:—June 30, July 7, July 14, July 21, August 11; and also on Wednesday, August 1. Admission 2s.

Vita-Glass Tests.—Three interesting tests of the effect of vita-glass on plants and seeds are at present being carried out at Hampstead, Southampton and Kew. At Westfield College, Hampstead, the London University has set up a new greenhouse thirty-six feet by twelve-and-a-half feet, divided in the centre, and having one half glazed with vita-glass and the other with ordinary glass. Various kinds of South African plants are being raised from seeds for the botanical class, and already Mr. A. Johnson, the gardener, finds that bedding plants are blooming much earlier under the new glass. At Southampton, Messrs. Toogood and Sons, Ltd., are carrying out several experiments under the glass on small seedlings, both flower and vegetable, to study its effect on "damping off." They are following actual rapidity of growth with a perennial Rye-grass test. The authorities at Kew have begun a third test, this time with four types of glass, ordinary glass of the clear and opaque varieties, and vita-glass of similar sorts. The greenhouse for this experiment has been divided into four sections, and during the summer similar plants will be grown under each type of glass. The Curator has stated that last summer the sun's rays permeated the vita-glass, leaving it cool to the touch, although the temperature below was considerably higher than that beneath ordinary glass. Gardeners will await with interest the further results of these three sufficiently diverse experiments.

Appointments for the Ensuing Week.—SUNDAY, JULY 1: Wakefield and North of England Tulip Society meets. MONDAY, JULY 2: Harrogate Horticultural Association meets. TUESDAY, JULY 3: Royal Horticultural Society Committees meet; Royal Tunbridge Wells Horticultural Society's Exhibition (two days); Peterborough Agricultural Society's Exhibition (three days); Wolverhampton Floral Fête (three days); Royal Caledonian Horticultural Society meets; London and South of England Viola and Pansy Society's Exhibition at Royal Horticultural Society's Hall. WEDNESDAY, JULY 4: Brighton, Hove and Sussex Horticultural Society's Exhibition (two days); National Sweet Pea Society's Exhibition in conjunction with the Bournemouth Horticultural Society's Exhibition (two days); Nottingham and Notts. Chrysanthemum Society meets; Croydon Horticultural Society Exhibition. FRIDAY, JULY 6: Bridport Chrysanthemum Society meets. SATURDAY, JULY 7: Romsey Gardeners' Association's Exhibition; Windsor, Eton and District Horticultural Society's Exhibition; Leigh-on-Sea Horticultural Society's Exhibition; Blackburn Horticultural Society, meeting and lecture; Wallington Horticultural Society's Exhibition.

"Gardeners' Chronicle" Seventy-five Years Ago.—*Early Peas and Potatos*—Reading *S. U.'s* remarks upon early Peas, at p. 389, induced me to turn up my note book, where I found the following entry: "June 2nd, 1853.—Dug new Potatos from the bottom of a south wall, rather small; June 7th—Dug new Potatos from the bottom of a south wall, very good; June 8th—Gathered a dish of good Peas." I sowed three kinds in the last week in November, viz., Prince Albert, Early Warwick and Emperor. The last-mentioned sort all rotted, as have also several of my sowings this season. The past spring has been the most severe that I have seen in Ireland for the last ten years. Nevertheless we have a good crop of Peaches. Plums and Cherries are but middling. *A. M., Kildare. Gard. Chron., June 25, 1853.*

TREES AND SHRUBS.

EUONYMUS RADICANS KEWENSIS.

THIS miniature form of the well-known E. radicans is dwarf in all its parts, and is a useful subject for clothing boulders on the rock garden, or it may be planted in other places where plants of dwarf stature are required. I find that it flourishes in positions fully exposed to the sun, or in semi-shade, under which latter condition it grows more rapidly and produces more slender growths, which intertwine and form mounds one foot or more high. These growths are clothed with small, deep green leaves, barely more than one-quarter-of-an-inch in length, ovate in shape, and with sparsely-toothed margins, while the veins are of a lighter shade, and impart to the leaves, although so small, an attractive appearance.

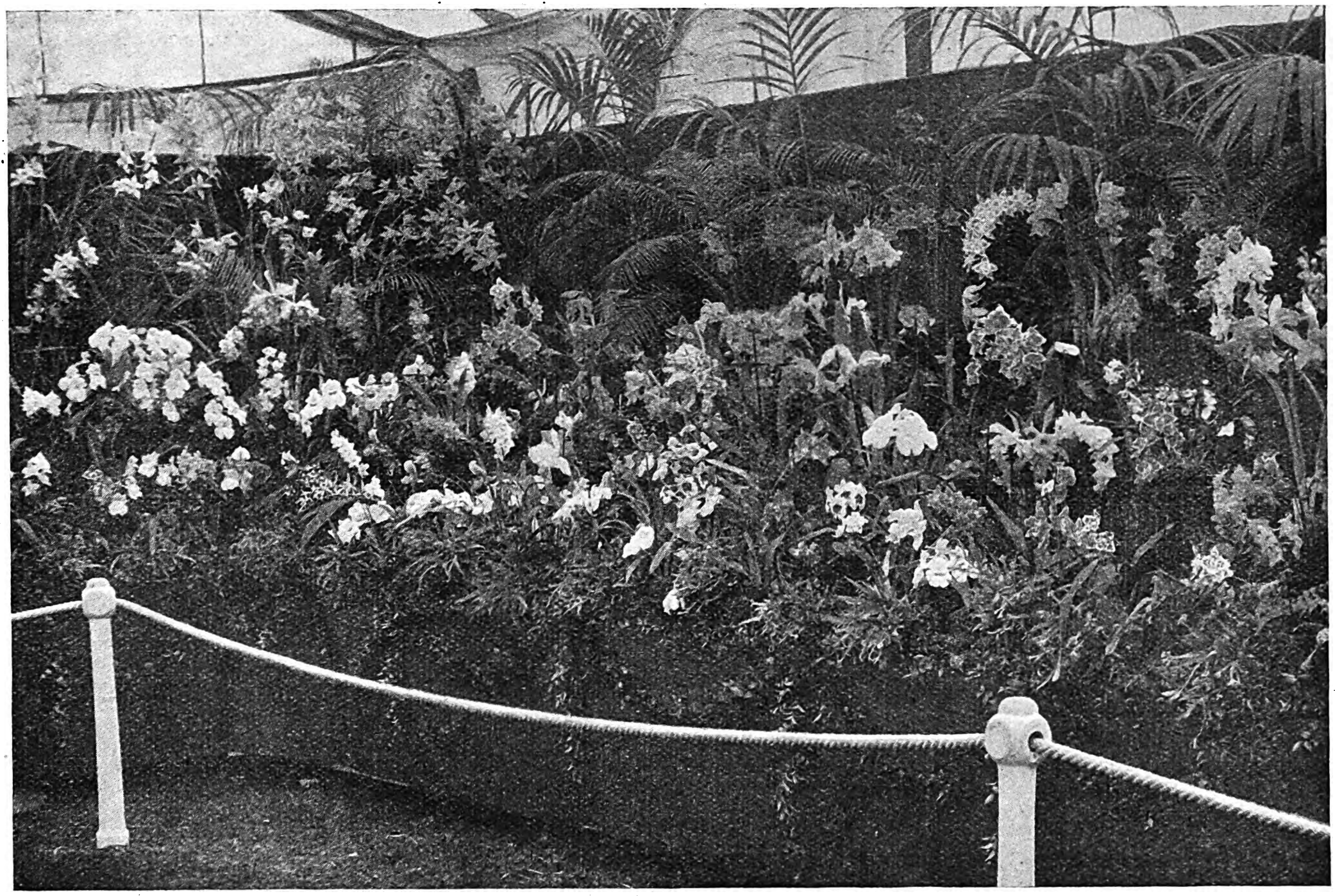

FIG. 222.—GROUP OF ORCHIDS FOR WHICH FRED J. HANBURY, ESQ. (GR. MR. FARNES), WAS AWARDED THE ORCHID CHALLENGE CUP AT THE CHELSEA SHOW. (see p. 383)

When planted in a sunny position growth is not so vigorous, and the shrub is more prostrate in habit; but wherever situated, E. radicans kewensis is an attractive evergreen, remaining fresh in appearance throughout the year. It is absolutely hardy, flourishes in ordinary loamy soil, and is one of the easiest of subjects to increase, for cuttings may be inserted at practically any time throughout the year with certainty of their rooting.

Incidentally, this subject has never been recorded as flowering in this country, and it is suggested that, in the eventuality of it doing so, it may be discovered to be a distinct species; in the meantime it is known in commerce, and fairly widely cultivated under the above name. It was introduced by Professor Sargent from Japan, and he sent it to Kew in 1893, from whence it has been fairly widely distributed.

ARCTOSTAPHYLOS UVA-URSI.

ALTHOUGH a native of this country and commonly and widely distributed throughout the northern hemisphere, for it is found in central and northern Europe, Asia and North America, extending to the Arctic Circle, this dwarf, trailing, evergreen Ericaceous shrub is not without value as a decorative garden subject, and is quite useful on the large rock garden, or as a ground cover, either in the wild garden in partial shade or full sunshine, or in the Erica garden.

It prefers peaty soil, absence of lime being most essential, and is rapid and free in growth, the long, trailing, almost prostrate shoots, which are downy when young, being clothed with obovate, leathery and light green leaves up to about one-and-a-quarter-inch in length, and producing roots here and there along their length.

The attractive little flowers are similar to those of the Arbutus, but are smaller, pale pink, of a deeper shade at the mouth, and produced during spring in small, compact, terminal clusters of three or four. These are followed by red, globose berries, which are smooth and lustrous, and when produced freely, quite conspicuous.

A. Uva-ursi is commonly known as the Bearberry, while at one time it was known as Arbutus Uva-ursi, a name applied to it by Linnaeus, but it has since been classified as a distinct genus. *M. W.*

INDOOR PLANTS.

PROSTANTHERA LASIANTHOS.

THIS attractive Australian shrub, one of the Mint bushes, grows satisfactorily and flowers freely in a cold greenhouse, and may, in favoured districts, succeed in the open, if favourably placed; it requires a peaty soil, sharply drained, and may be propagated from cuttings of the young growths.

Sometimes called the Victorian Dogweed, P. lasianthos blossoms during early summer, the flowers being white, faintly tinged with red, and the throat of the corolla is internally spotted with red. The pedicels are short and the racemes somewhat panicled, while the flowers are hirsute.

The petiolate leaves are oblong-lanceolate, acute and serrated, the branches being glabrous, while the average height of this attractive and uncommon shrub is four to six feet. Introduced in 1808, P. lasianthos is figured in the *Bot. Mag.*, t. 2,434; and is a plant of permanent decorative value and considerable interest.

FICUS PARCELLI.

THIS one-time favourite foliage plant was in evidence at the recent Chelsea Show, and was afforded considerable admiration for several really fine examples of it were displayed by exhibitors of indoor plants.

The bright green leaves are irregularly blotched with darker green and white, rendering the plant highly ornamental and most desirable in a collection of warm-house subjects. F. Parcelli is a very distinct species, hailing from certain of the South Sea Islands, whence it was introduced in 1874; it thrives and grows rapidly, in common with many of its congeners, either in fibrous loam or peat and is a gross feeder. Therefore it requires liberal treatment, including application of liquid manure when growing actively. Considerable warmth and moisture are requisite for the plant's well-being, together with shade from hot sunshine. Propagation is effected easily by cuttings, and small plants usually prove both serviceable and decorative.

This free-growing and handsome species is well adapted to conservatory or exhibition grouping, and should be grown wherever facilities exist for the exploitation of stove plants. *Ralph E. Arnold.*

The Week's Work.

THE ORCHID HOUSES.

By W. GILDEN, Orchid Grower to Dr. F. CRAVEN MOORE, Manchester.

Cypripediums.—Members of the dwarf-growing section of this genus, such as C. bellatulum and C. niveum, and the many hybrids derived from them, which flower at this season, should receive attention as they pass out of flower if they require fresh rooting material. Annual repotting is not necessary, but if the compost is at all sour, or the plants require larger receptacles, it should be done carefully to avoid injuring the brittle roots. Allow the compost to become dry before using it, and remove the old soil carefully. If the healthy roots are enveloping the drainage crocks they need not be disturbed, but should be moved intact into a slightly larger pot. These Orchids are lime-loving subjects, therefore plenty of limestone chips should be used, both with the drainage and with the compost, the latter consisting of equal parts of good fibrous loam and finely cut A.1. fibre, adding crushed crocks and limestone chips. Firm potting is essential, and the growths should be kept above the compost. Allow the soil to become dry between each application of water, and do not allow any moisture to collect in the centre of the plants. If they are only grown in small quantities, a good method of dealing with these Orchids is to immerse the plants in water to within an inch of the top of the pot until the water percolates to the surface of the soil. These Cypripediums thrive in a light position near the roof-glass at the warm end of the intermediate house, with humid surroundings, and shaded from direct sunshine. During the winter they require much drier conditions at the roots, and only require water at long intervals, but they should receive all the light available.

THE KITCHEN GARDEN.

By ALLAN FALCONER, Gardener to the Cheadle Royal Mental Hospital, Cheadle, Cheshire.

Brassicas.—Where the method was adopted of sowing the seeds in the permanent quarters as advised previously, and the seedlings were thinned to a few strong plants in each clump, really good plants should be available for planting as other ground becomes cleared of early crops, finally thinning each cluster to a single plant and drawing soil up to the stems when hoeing. Cauliflower plants from the maincrop sowing should be especially useful for providing a late crop before the early Broccoli are ready, and form a succession to those left where growing. Where this system is adopted, no time should be lost in planting all available ground with the various subjects, Cauliflowers, late Broccoli, purple and white sprouting Broccoli, Savoys, Kales and Christmas Drumhead Cabbages, the latter being a very hardy subject and useful for use after Christmas. Ground between early Peas which has been used for a catch crop may be planted with the late Kales and purple and white sprouting Broccoli, even before the Peas are cleared, and they should make really good material; the ground, having been cleared of rubbish and hoed, should be in good condition to receive them, and the shade from the rows of Peas should also be of benefit to the plants. Cauliflowers that are making free growth should benefit by copious supplies of liquid manure, especially on dry sandy soils, while all Brassicas are benefited by drawing soil up to the stems so soon as they are large enough, and backward plants may be assisted by a light application of sulphate of ammonia. The free use of the hoe should assist growth, but where the soil gets very dry it is advisable to mulch the rows of Cauliflowers, for quick growth without a check is necessary to produce really good heads. Where caterpillars are troublesome on a small scale, handpicking should be resorted to, but on large areas dustings of soot or lime may deter the butterflies from depositing their eggs on the plants, and also be beneficial to the plants.

PLANTS UNDER GLASS.

By J. COUTTS, Assistant Curator, Royal Gardens, Kew.

Mignonette.—Although so popular, this subject is seldom seen in good condition when cultivated in pots. It is certainly not the easiest of plants to grow successfully in pots, but it is so popular that it is worth extra trouble to grow well. The usual practice is to sow the seeds directly into the flowering pots, although, contrary to the general belief, it may be transplanted successfully. The potting compost should consist of a good mellow, medium loam and old mortar rubble in preference to sand, for lime is essential to its successful cultivation. If available, some dried cow manure should be added to the compost, also a six-inch potful of bone-meal to every bushel of soil. It is important when filling the pots that the soil is rammed very firmly. Single plants may be grown in five-inch pots, or three or four may be placed in a six-inch pot, while the best results are obtained by growing them in perfectly cool, low pits, well up to the roof glass.

Primula effusa.—This species, one of the newer Chinese Primulas, is very dainty and charming, resembling P. malacoides somewhat. Like that species, it is inclined to vary under cultivation, and it has already given double flowers, also plants of a stouter habit than the original ones. It may be raised from seeds sown at this time in a cool greenhouse, while old plants afford a ready means of increase, for they may be divided easily. It succeeds under the same cultural conditions as the well-known P. malacoides.

HARDY FRUIT GARDEN.

By T. E. TOMALIN, Gardener to the EARL OF BESSBOROUGH, Stansted Park, Emsworth, Sussex.

Peaches and Nectarines.—All unnecessary shoots having by this time been removed, those remaining to furnish the tree for next season should be trained into place before they become too brittle, whilst those encroaching beyond the boundary allotted to each tree may be stopped at the third leaf. Aphis has been troublesome on Peaches this season and where the pest still persists the trees should be sprayed with a nicotine wash. Red spider, too, has a most weakening effect on the growths of Peach and Nectarine trees. Where this pest has given trouble in former years, an effort should be made to prevent its reappearance by thoroughly spraying the trees with clear water every evening during the summer months, and especially during periods of dry, hot weather.

Raspberries.—A period of showery weather provides ideal conditions for the ripening of Raspberries—provided that enough sunny periods occur during which the fruits may be gathered when perfectly dry. Under such conditions of alternating moisture and sunshine, the canes are enabled to ripen the berries at the ends of the trusses. Should dry weather prevail, however, the deficiency of moisture should be made good by copious watering, which should be repeated after each gathering of the fruits.

FRUITS UNDER GLASS.

By T. PATEMAN, Gardener to SIR CHARLES NALL-CAIN, Brocket Hall, Hertfordshire.

Strawberries.—By this date there should be no difficulty in obtaining a good selection of runners for layering in small pots to produce plants for next season's crop under glass. Only young, vigorous plants are capable of producing suitable material for this purpose, and these are best obtained from maiden plants that have been grown on specially for propagating. The runners should be layered in three-inch pots containing suitable compost, sweet and rich in nature, and consisting of open loam, old mortar-rubble, charcoal, bone-meal, and a little short manure. For this potting the compost should be passed through a coarse seive, but for the final potting, I do not recommend sifting the soil. With strict attention given to watering during hot weather, the young plants should soon form roots in the new soil and be ready for their final potting, and as the compost needs to be made firm by ramming, it should be used in a fairly dry state. To ensure this condition it should be prepared in readiness and stored in an open shed. After the final potting the plants should be stood on boards in an open position. Watering is very important, for the receptacles soon become filled with roots, when applications of weak liquid manure may prove of benefit to the plants.

Tomatos.—Tomatos that are being grown in cool houses need careful attention with regard to watering in their early stages of growth. Personally, I believe in keeping the soil of the borders, pots or boxes, well on the dry side until the plants have set two or three trusses of fruits. After this stage one may scarcely over-water the plants, and liberal supplies of liquid manure or approved fertilisers should prove very beneficial to them. If the fruits are inclined to remain yellow and hardened at the base, the soil should be given a dressing of potash in some form, nitrate of potash being suitable.

THE FLOWER GARDEN.

By J. G. WESTON, Gardener to the DUKE OF DEVONSHIRE, Chatsworth, Bakewell, Derbyshire.

Thinning Annuals.—Owing to the dry period experienced during April and May, annuals were sown later in some cases, and germination was somewhat irregular. Since the rains, however, they are now growing rapidly, and thinning should be attended to without delay. Any gaps should be filled by carefully transplanting some of the seedlings, choosing dull, showery weather for this work, and shading the seedlings if necessary from the strong sun until the plants are re-established.

General Remarks.—Every effort should be made to complete the planting of tender plants for summer effects. When planting is delayed the plants become stunted in the pots or boxes and receive a check from which they take a long time to recover, so that the season is well advanced before any definite effect is produced. If, from unforeseen circumstances, plants cannot be put out so early as anticipated, they should be fed to keep them healthy and in vigorous growth.

FOR NORTHERN GARDENERS.

By A. T. HARRISON, Gardener at Jordanhill Training Centre, Glasgow.

Parsley.—Where this useful herb is much in demand during the winter months, a sowing should be made about the end of June on a sheltered border, where, if necessary, the plants may be protected during inclement weather. On some soils Parsley is by no means the easiest of herbs to supply in quantity all the year round, and where it is attacked at the roots by the fungus Plasmopara nivea, the results are very disappointing. The soil should be dug deeply and manured well some time previous to the actual sowing, and later an application of freshly-burned lime may be applied, and worked into the surface layer. These precautions are only necessary where experience has proved that Parsley may not be grown without difficulty, but under favourable conditions a well-firmed seed-bed on ground that has been well-manured for a previous crop is suitable.

Spinach Beet.—A sowing of both Spinach Beet and Seakale Beet should be made on ground that has been cleared of an earlier crop, to provide large quantities of green leaves next spring, which are very useful when green stuff is scarce. The seeds should be sown in drills eighteen inches apart, and when the seedlings are large enough to handle they may be thinned to from nine inches to a foot apart. If the soil is very dry at sowing time the drills should be saturated with water, which should hasten and ensure a regular germination. Both these crops have an exhausting effect on the soil, and so soon as they have passed the useful stage they should be removed.

ALPINE GARDEN.

ACHILLEA LEWISII.

Some plants only reveal their true beauty under certain conditions, and I have never fully realised the beauty of the hybrid Achillea Lewisii, until now. I have grown it in the rock garden, but now it has found a home in the crevices of a low wall flanking a flight of steps, and in this position it appears to have gained in beauty, for its silvery foliage and heads of creamy, soft flowers project from the red sandstone, of which this low wall is constructed. It pleases all who see it, and as it increases in size it should become more and more attractive.

I believe that A. Lewisii was raised by Mr. W. E. Th. Ingwersen a number of years ago, and that its parents were A. argentea and A. tomentosa. To the latter species it owes the creamy yellow touch which gives it much of its beauty, and a comparison of A. tomentosa with this hybrid tells greatly in favour of the latter. It has been called A. King George by some, but, much as one would like to attach the name of His Majesty to a good plant, priority of name must have preference, and A. Lewisii it remains, although I do not know the origin of the title. A. Lewisii is hardy, but likes a dry soil and plenty of sun. *S. Arnott.*

GERANIUM NAPULIGERUM.

Why this plant should be named napuligerum, or Turnip-rooted, I really cannot imagine; personally, I much prefer the synonym, *i.e.*, G. Farreri, but after much vacillation by the powers that be, it seems to have settled down as G. napuligerum, so let us make the best of it, and hope that we shall not be asked next year why we do not call it G. Farreri.

In a moment of doubt, I have just refreshed my memory by re-reading Farrer's original description of the plant in the *English Rock Garden*; he is very brief, and merely describes it as a fine species, with a sort of bulb for root. In our plants, and in any which I have ever grown under this name, this bulbous root has never appeared, although the description otherwise answers. I wonder if it is the plant which was originally described under this name?

It is, however, a gem of gems, in habit somewhat reminiscent of G. cinereum, but the leaves are darker and more glossy, and the flowers, when first open, are a pale, apple-blossom pink, with a wonderfully effective bunch of black anthers in the centre; after being open for a day or two the flowers turn to a rich rosy-pink, and the black stamens disappear.

The whole plant is no more than four inches high, and a specimen we have growing in a recess in a wall facing north has been a picture of beauty. Its glories are fading rapidly, and we are awaiting the crop of seeds it sets so freely and which germinate so readily if sown when fresh; the best method is to sow the seeds directly gathered from the plant, a method which is strongly to be recommended with most alpines. *W. I.*

SENECIO SCORZONEROIDES.

Senecio scorzoneroides, Hook. f., was described by Hooker under the above name in his *Flora Novae Zealandiae*, published in 1853. In 1899, when Kirk published his *Students' Flora of New Zealand*, he reduced it to Senecio Lyallii var. scorzoneroides. This decision was upheld by Cheeseman in the first edition of *The Manual of the New Zealand Flora*, published 1906, and also in his *Illustrations of the New Zealand Flora*, t. 111, published 1914. Cheeseman returned to Hooker's conception of the plant as a distinct species in his second edition of *The Manual of New Zealand Flora*, published in 1925.

No one who has been privileged to see the beautiful and charming Marguerite-like flowers of Senecio scorzoneroides growing in its natural habitat (Fig. 223) would hesitate in placing it amongst the élite of the New Zealand flora. From the beginning of December until the end of February, many acres of the alpine herb-fields, between 3,000 feet and 5,000 feet, appear white with the abundant blossoms of this plant.

S. scorzoneroides is a moisture-loving plant, in fact, it usually occupies the best soil on the mountain side, although stunted forms are often found among dry rocks, debris-slips and such-like dry situations. The stout, creeping root-stock, which is just covered by the soil, sends out cord-like, adventitious roots which penetrate to great depths in search of moisture. Immediately the winter snows melt, the root-stock sends up an erect rosette of dark green leaves, which are green during the summer only. The plant is capable of reaching maturity, and even arriving at the seed-bearing stage, well within a month of its having been snow-covered.

The leaves are broadly lanceolate, being from three inches to eight inches long by a-quarter-of-an-inch to three-quarters-of-an-inch broad, three- to nine-nerved, and entire. From the centre of the rosette grows the robust flowering stem, from six inches to fourteen inches high, terminating in a broad corymb of many flower heads, each being one inch to two inches in diameter, or even more. The plant is glandular pubescent in all its parts.

S. scorzoneroides has several distinct forms, and many variations in colour. The disc-florets are usually yellow, but bright salmon coloured forms are often met with in nature.

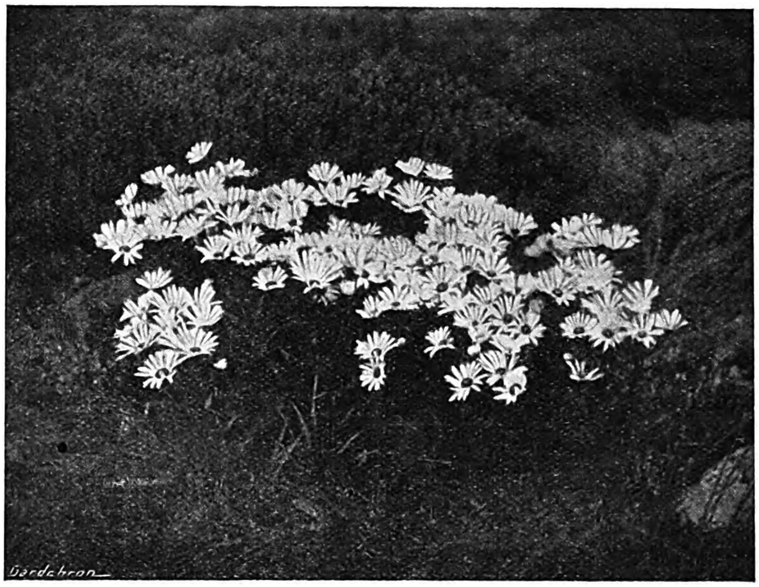

FIG. 223.—SENECIO SCORZONEROIDES.

The ray florets arrange themselves into two great groups: in one form they are inserted not very closely together, giving the head a star-like appearance; in the other form they are inserted very closely together, giving the conventional Senecio effect. There is a very great range of colour in the ray florets, from pure-white, through cream and lemon to pale salmon. These gradations of colour may be partly due to hybridisation with Senecio Lyallii, a similar species which is not so common as S. scorzoneroides.

S. Lyallii favours damp situations, being often found in bogs, and it is in the vicinity of those areas that the greatest numbers of variations occur. It may be added that the variations mentioned include differences in habit, size of leaves, and degree of pubescence.

The chief differences between S. scorzoneroides and S. Lyallii are that S. Lyallii is more slender in all its parts, and is much less pubescent; in fact, many individuals of S. Lyallii are completely glabrous. The flower heads of the typical S. Lyallii are always yellow. Senecio Lyallii is a very mediocre plant in every way.

S. scorzoneroides is a very difficult subject to deal with in the garden. It prefers a deep, gritty loam with plenty of moisture, but plenty of drainage; also a situation exposed to full wind and sun. Great care should be taken to prevent slugs from eating the young growing tips during early spring. *A. W. Anderson, Botanic Gardens, Dunedin, New Zealand.*

A REVISION OF VIOLAS.

(*Continued from p. 454*).

Viola viarum, Pollard. Under this heading, or rather in the same paragraph, Farrer has lumped together a large number of species as being all "in the same rather dim ruck." V. viarum itself appeared at Vincent Square recently, and although not a brilliant Violet, it is at least of more value than some others more highly praised. The leaf form is very distinct—being generally divided into three main lobes, of which the central one is very long and the two lateral much shorter and lunate along their lower margins. The leaves, however, vary considerably in different plants, some being undivided and some lobed up to seven times. The blue-purple flowers are not unlike, although inferior to, those of V. palmata. The species grows in dry soil, *e.g.*, along railway banks in Missouri and Kansas; and also is common among rocks on the banks of the White River in Arkansas.

Following Farrer's order but departing from our alphabetical sequence, the following notes on "the rather dim ruck" may be useful for purposes of identification, since it is not too much to say that the collector of Viola species cannot (with few exceptions) place any reliance on the identity of the plants which may reach him.

V. renifolia, Gray, and V. lanceolata, L., belong to the palustris section. The former grows along with V. blanda, with which it may be confused, but has larger white flowers. In this case the petals are all beardless, and the three lower ones have brown veins. It inhabits woods and swamps where Arbor-Vitae grows, and its area extends from Newfoundland across Canada to the Mackenzie River, and southwards along the Rockies to Colorado. V. lanceolata also belongs to bogs and moist meadows; it has white flowers, the three lower petals having purple veins, and is distinguished by the lanceolate leaves, up to six inches long, which run down into rimmed, reddish petioles. Its area extends from eastern Canada along the Atlantic seaboard of the United States, and it reappears in Venezuela.

V. macroceras, Bunge, and V. imberbis, Ledebourg, are one and the same, the correct name being V. macroceras, with which the well-known V. Jooi from Transylvania and V. purpurea from the Caucasus are identical. See under V. Patrinii in *The Gardeners' Chronicle*, February 4, 1928.

V. ovata, Nuttall, should be V. fimbriatula, J. E. Smith, the Fringed Violet, so-called apparently from the extreme hairiness of all its parts. See under V. incognita in *The Gardeners' Chronicle*, August 13, 1927.

(*To be continued*).

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THE NEW HALL OF THE ROYAL HORTICULTURAL SOCIETY.

AT the opening of the third decade of the present century it became apparent that the demand for space at the Royal Horticultural Society's meetings was increasing rapidly, and often exceeded the accommodation available. Accordingly, in 1922 a Committee was appointed to look for a site for a new hall, the general direction being that such a hall should be at least twice as large as the existing one that faces Vincent Square. Three sites, namely, the Royal Botanic Gardens in Regent's Park, a site on the Thames Embankment, and the site eventually chosen, received careful consideration. The disadvantages of the Regent's Park site were that the conditions laid down by the Crown gave no security of tenure, and also restricted the height of any buildings which might be erected on the site. Further, it was felt that it might be a mistake to move the Society's headquarters to an entirely different part of London, as the Society's activities have always followed the River Thames from Chiswick to the Temple.

The Embankment site was considered too large and the rent for a ninety-nine years' lease too high. Accordingly, in November, 1923, the Committee recommended that the Society acquire a 999 year's lease from the Ecclesiastical Commissioners of the site at the corner of Elverton Street and Greycoat Street, immediately behind the existing hall. Architects were then invited to submit schemes for the new hall, and two designs came under the consideration of the Council. The first design, which was not accepted, was for a hall built with a single span, not unlike St. Pancras Station. The plan ultimately accepted was submitted by Messrs. Easton and Robertson, and was based on novel architectural principles, the object being to obtain the maximum illumination with a minimum of direct sunlight. This method of lighting had already been tried with success at the Gothenburg exhibition, at the new Market Hall at Lyons, and at Berlin. Doubts having been expressed as to the adequacy of the lighting, a scale model was constructed and submitted to the National Physical Laboratory, who reported favourably upon it. At this time, doubts began to make themselves felt as to the advisability of the Society possessing two halls, and the Office of Works was approached with a suggestion that an exchange might be effected of the old hall for the Home Office building which occupies the corner of Elverton Street and Horseferry Road at the end of the new site. The Government, however, were only willing to exchange on terms which the Council, as trustees, felt they could not accept on behalf of the Society.

The way was now clear for the erection of the new hall. The plans were submitted to the local authorities who required certain modifications, notably as regards ventilation and exits, which added materially to the cost. Messrs. Foster and Dicksee were given the contract and it appears probable that the total cost of the hall, with all furnishings and equipment, will be under £170,000.

The façade of the hall is in Greycoat Street (Fig. 224), and the finely-proportioned, semicircular entrance with the three tiers of windows above, expresses very well the general conception of the building. Impressive wrought iron gates admit to the entrance hall, which is lined with fine Botticini marble and has a floor of Roman stone. The use of these light-coloured materials gives the entrance hall an attractive appearance, in spite of the fact that the hall had to be kept low in consequence of the superimposed dais. From the entrance hall two flights of steps lead into the main hall, while in the centre a broad flight leads down to the restaurant and cloak-rooms. The main hall is 150 feet long by 120 feet wide, the total area being about twice that of the old hall. It is lighted by four stepped tiers of clerestory windows carried on elliptical arches fifty-eight feet high and sixty-nine feet in span—twenty-nine feet wider and twenty-seven feet lower than the nave of St. Paul's. The thrust of these arches (Fig. 225) is taken by the flat roof of the aisles, which act as vast horizontal girders and are tied in at both ends. The whole structure is of reinforced concrete (Fig. 226), and has absorbed 5,000 tons of Portland cement and 500 tons of steel rods. This form and construction arose from the desire to obtain lighting that would closely approximate to outdoor conditions, and which would yet lend itself to a satisfactory architectural expression, and be of such a permanent nature as to require very little upkeep. The general effect is well expressed by a remark made by Mr. Reynolds-Stevens, the President of the Royal Society of British Sculptors, who, when he was in the hall, for the first time, said: "I feel as if I were out-of-doors."

The general lay-out of the hall may be compared to a Gothic cathedral, such as Ely. At the east end of the nave there are tiers of deeply recessed windows, and as a decorative feature, a finely designed clock. The west end of the building presented a difficult problem, as here a flight of stairs leads from the body of the hall up to the dais. The general effect is that of the apse of a church, while the flights of stairs going down to the entrance hall suggest the steps going down to the crypt or undercroft. The walls of the dais are of marble, and the dais is enclosed with a wrought iron railing. Above it the west wall is enriched by an architectural door-way with a balcony, and above this appear the arms of the Society in their proper colours. At one time it was hoped that a fine bas-relief would occupy the whole of the west wall above the dais, and one of our most eminent young sculptors was prepared to give the design; it was found, however, that the cost of its execution would be prohibitive. The walls of the two aisles are left in dove-coloured brick, while the main surfaces of the east and west ends are rendered in a warm cream colour. The columns between the aisles and naves are covered with manumarble to the height of ten feet. Above this the reinforced concrete, of which the hall is constructed, has been bush-hammered by hand to give full expression to the material.

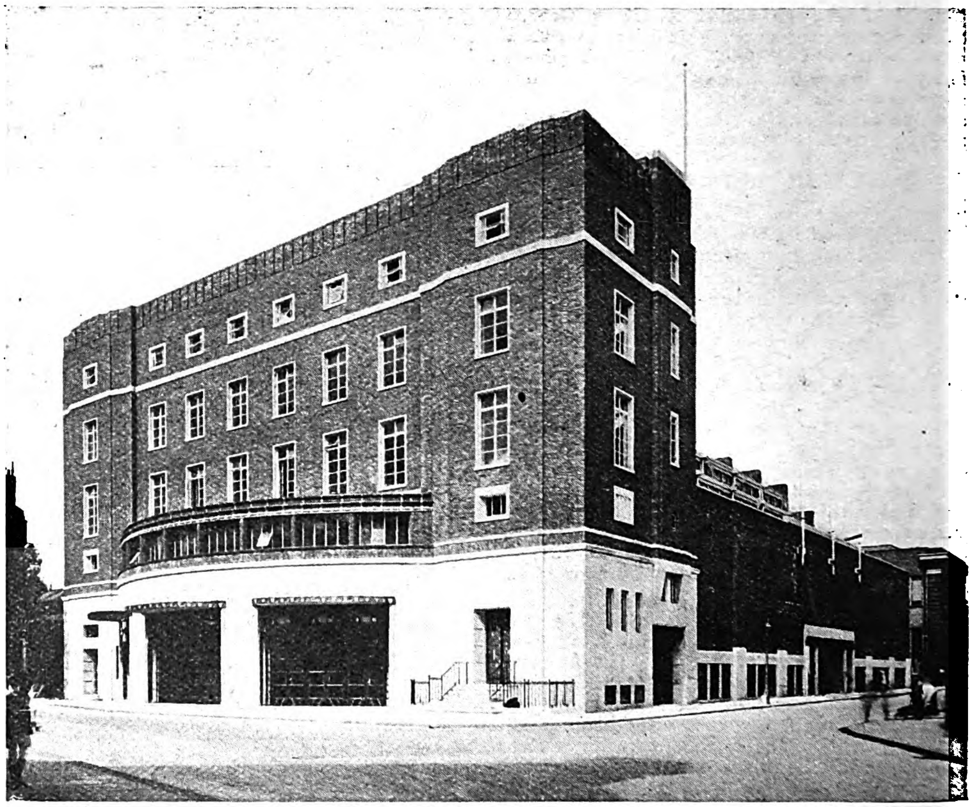

FIG. 224.—THE FAÇADE OF THE NEW R.H.S. HALL, IN GREYCOAT ST., WESTMINSTER.

The floor of the hall is constructed of Pitch Pine in a geometrical pattern, and where wall and floor meet coved terazzo has been used to enable the hall to be kept clean and free from dirt. The south aisle is somewhat encroached upon by the terrazzo bulk-heads, which are rendered necessary by the windows of the restaurant and kitchen at the pavement level, and also by the steps leading to the direct exit to Elverton Street. The hall is heated by panels, and the introduction of warmed air at the roof level of the aisles. The special lighting has been designed with a view to approximating to daylight.

From the entrance and main hall, stairs and lifts lead to the three floors above the dais. The first two floors are spacious galleries running the whole length of the main elevation. The first floor may be divided by movable partitions into committee rooms, and is fitted with a cinematograph chamber. The top floors contain three studios, with north lighting, for the plants submitted to the Floral and other Committees. These studios are provided with a special lift which takes plants direct from the floor of the hall.

The restaurant will seat two hundred people, and is lighted from Elverton Street; there is also a lounge and tea room. Behind the restaurant are ample kitchens which will not only serve the requirements of the restaurant but will enable large banquets to be served in the main hall for something like 1,200 people. The restaurant is a cheerful room, decorated in a scheme in which orange predominates, and enlivened by panelled mirrors. The Society has been fortunate in securing as their caterers Messrs. Ring and Brymer, who do the catering at The Mansion House, Guildhall, and at most of the City Companies' halls; a full restaurant licence for the sale of wines and spirits has been granted to the Society. On this level also are the cloak-rooms and lavatories; the former were specially planned after the Housing Committee had inspected the cloak-rooms of some of the leading London hotels.

The wall-space, owing to the bulkheads in the south aisle, will be comparatively small, and consequently large exhibits will have to be arranged on island sites; the Housing Committee is about to consider what are the best arrangements for staging the exhibits, it being felt that the present trestles and tables and shabby hessian are not worthy of the new hall. A still more important question is that of the retention of the two halls. The present suggestion is that the old hall should be used for the five winter months, November to March, and the large hall for the remaining seven months, the two halls being used on occasions like the Autumn Show. At the old hall, however, the offices and the library accommodation are both totally inadequate, and if this hall and administrative block are to be retained, it will be necessary for a very complete reconstruction of the building, which will cost not much less than £20,000. The ideal solution would be to erect an administrative block in the closest proximity to the new hall and then dispose of the old hall. The difficulty is that it does not seem possible to find a site for the Offices and Library sufficiently near the new hall to be a practical proposition. However, in view of the cost which will be involved in any scheme of reconstruction, the Council has wisely decided to defer the matter until they have had full experience of the working of the two halls.

Minor matters which require consideration are the question of curtains which will cut off the nave of the new hall from the aisles and, further, whether rods and rings should be provided along the aisles to enable backgrounds to be hung.

Acoustic questions are also important, and in this connection it is satisfactory to note that when a trial was given by the full band of the Grenadier Guards, the Bandmaster expressed his delight at the acoustic qualities of the building.

I am sure the Council will be glad to receive from Fellows, exhibitors and the public generally, any suggestions which will help to solve the problems stated in my remarks above.

The Council, I think, should be congratulated on their choice of Mr. M. J. Easton as architect; some of his best work may be seen in the lay-out of the Welsh watering-place, Prestatyn, and many readers saw the British Pavilion, Restaurant and Barge which he designed for the Paris Exhibition in 1925. Dr. Oscar Faber, the structural engineer; Mr. William MacInture, adviser on ventilation and lighting; Mr. Hope Bagenal, acoustical consultant; and Mr. Howell, Clerk of the Works, were also instrumental in the success of the hall.

The Housing Committee consisted of Mr. F. R. S. Balfour, M.A., V.M.H.; Mr. W. A. Bilney, V.M.H.; Mr. R. Cory, F.L.S.; Dr. A. W. Hill, C.M.G., F.R.S.; Sir William Lawrence, Bart., F.S.A.; The Hon. H. D. McLaren, C.B.E.; Mr. H. B. May, V.M.H.; Mr. George Monro, C.B.E.; and Mr. C. T. Musgrave, V.M.H. (Chairman), who were joined by Mr. J. B. Stevenson on his election to the Council in 1928. The Committee met fifty-six times, and every detail of the work came under their consideration. To Mr. C. T. Musgrave (see p. 462), who presided over the Housing Committee throughout, a great debt is due for his untiring devotion and unfailing courtesy and good temper; the difficulties when a building is being erected under the supervision of a large committee can easily be imagined. It is hoped that the hall will be ready for exhibitions in September, and that the restaurant will be open about the same time. *Wm. Lawrence, Burford, Dorking.*

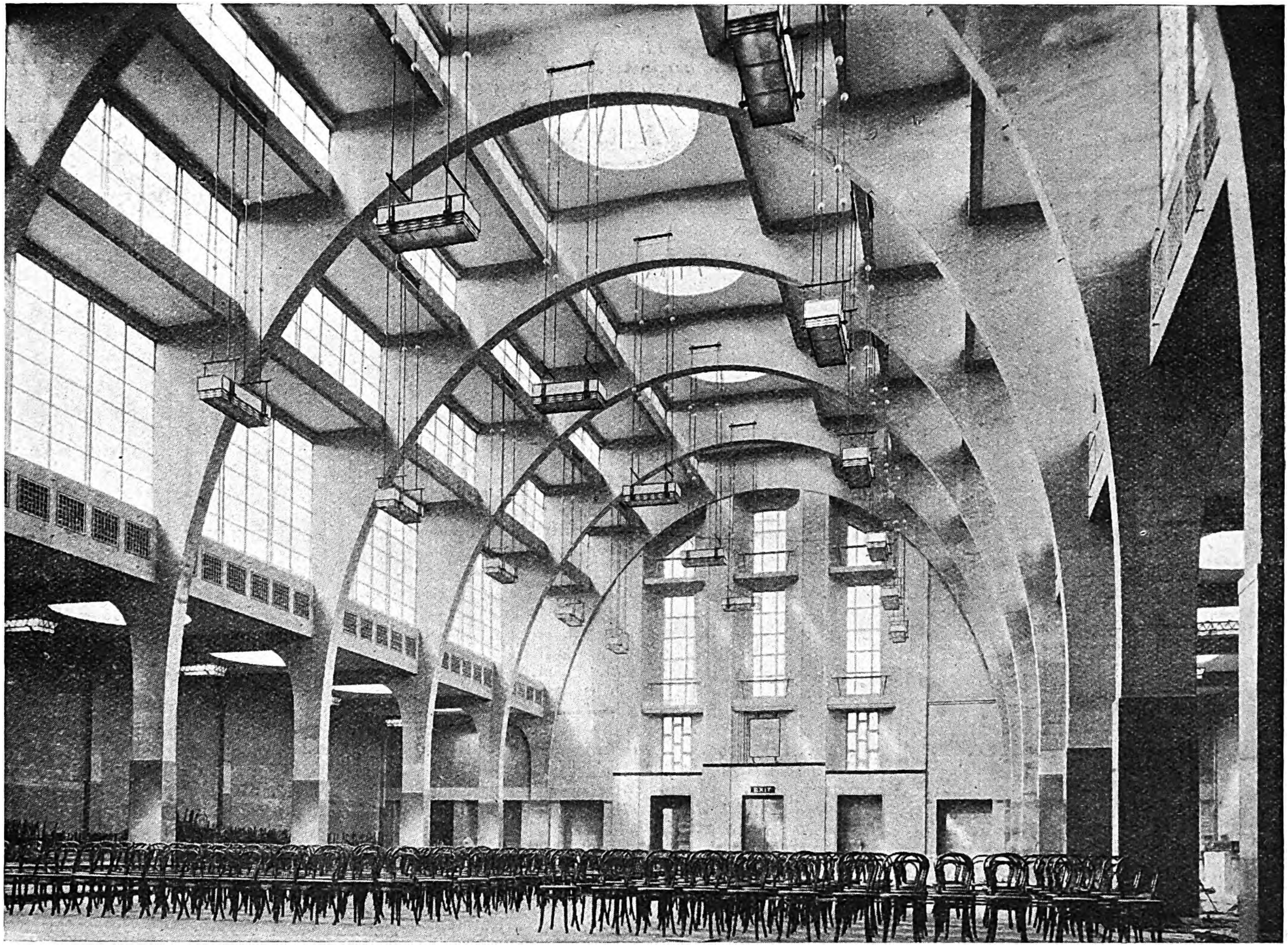

FIG. 225.—VIEW OF THE INTERIOR OF THE NEW R.H.S. HALL.

IDEAL GARDENS AND PLANT LORE.

A BEAD AND ROSARY BOSKET.

(*Concluded from page* 336.)

WHILE we are among the Legumes, it may be desirable to mention other plants of the Order whose fruits or seeds are used in making necklaces and rosaries. To go back to India, we may draw attention to the bright red seeds of the yellow-flowered Sandal-wood, Adenanthera pavonina. The blossoms are arranged in pretty spikes, the pod is long and curved, and contains oblong, scarlet seeds which attain a considerable size. These, like the Crab's Eyes (Abrus) and others, are used by the goldsmiths as weights, each seed weighing about four grains. This tree and its nearest relatives are largely associated with the folklore and religion of India. One of the names for the Sandal-wood is Sami, and the wood of this tree is specially chosen whenever possible for producing fire by friction. Parvati, when her consort Mahadeva affronted her, fled to the mountains and hid in the hollow trunk of a Sami tree, where she performed her devotions. Fire was kindled from her person which spread far and wide to the great danger of man and beast. To avoid needless distress the flame was recalled and confined to the Sami tree. Here the goddess fixed her abode, on which account she is known as Sami-Rama, whence some ingenious speculators have attempted to derive the name of Semiramis. The tree is sacred, gives an increase of virtue, bestows wealth and corn, and is an object of worship at a certain season of the year. Not only so, but its timber is highly valued, while by simply rubbing the wood on wet stones a valuable red dye may be obtained.

The term Red Sandal-wood is sometimes given to another of the Leguminosae, Pterocarpus santalinus, a large tree which abounds on the Coromandel coast, thought by some to be the Almug of Scripture. The wood is close-grained, heavy, and of a red colour, and like the last is used for dyeing, while its seeds are employed for making necklaces.

The Crab's Eye. Abrus, is not the only plant which bears a scientific name derived from the Latin word for prayer. Another of the Leguminosae, Rhynchosia phaseoloides, is similarly honoured, and for the same reason. This species is a native of Mexico, and the seeds are half black, half scarlet, small and Pea-like. The bright red seeds of the Coral Tree, Erythrina Corallodendron, serve the same end, and as the name implies, resemble coral. This gouty-stemmed member of the same family (Leguminosae) is a native of the West Indies, and has trifoliate leaves with long spikes of large papilionaceous flowers. A nearly related form is the Indian Coral Tree, E. indica, known in Sanskrit as the Parijata, one of the trees of Paradise. It is one of those trees which produce the flowers before the foliage. The seeds are large, smooth, and of a dark red colour, produced in pods which are several inches in length, black when ripe, and very protuberant where the seeds are situated.

Another native of the West Indies and of tropical America, whose seeds are used for beads, is Leucaena glauca, which belongs to the Mimosa section of this vast family. It has become naturalised in the south of Europe as well as in other warm countries. Very different is the plant which has become known as Job's Tears, Coix Lachryma-Jobi, on account of the seeds which are produced by the loose panicles of this annual grass. They are described as oblong globose, about the size of Peas, hard and pearly; and are not only used for beads, necklaces and rosaries, but are made into little caskets and other similar ornaments. Other species are used as ornaments in India. Gerard was familiar with this grass, and tells us that "every graine resembleth the drop or teare that falleth from the eye."

In the West Indies one finds another small tree, Jacquinia armillaris, which is known as Bracelet Wood, because its seeds, which are yellow or brown, according to age, are used as beads for making bracelets. The plants of this genus are very ornamental, and twigs of this particular species are so beautiful that they are made by the natives into garlands of which they are particularly fond.

Of the Lotus much might be written, for it enters into all the religious rites of the East. Its fruit resembles the rose of a gardener's watering can, the holes being represented by the erupting seeds the size of a Filbert. These, like the rest of the plant, have a sacred character, and are consequently sometimes used for the purpose of making rosaries.

In China, the stones of Apricots, Peaches and other allied fruits are in special request for making beads for necklaces and bracelets. Many years ago I purchased some of these in Canton and elsewhere which are covered with microscopic carvings of the most exquisite grace and elegance, needing a good lens to bring out their beauty. These are for personal adornment rather than for religious use, but I have rosaries such as the Buddhists employ, which are made of the seeds of plants of different kinds, some of which have already been described above. It is, however, impossible to name all the plants which might find a place in our bosket for beads and rosaries. We must therefore close by drawing attention to the one which is of special importance because it has given to us the name of Rosary itself. Why the Rosary was named after the Rose has been a matter of much dispute. In Germany the Rosary is named Rosenkranz, which also means a chaplet or a garland of Roses, and Professor de Gubernatis remarks: *Enfin, que la guirlande (originairement formée peut être avec les fruits rouges de l'eglantier, Rosa canina) sur laquelle les femmes pieuses comptent leurs prières à la madone, s'appelle rosaire.* I like the idea much better than some which have been advanced to account for the name. The Rosary, according to some writers, was a string of beads made of Rose petals tightly pressed into round moulds when real Roses were not strung together. We know that garlands or chaplets of Roses have been in great request from the earliest ages, but it is easy to see how the use of the beautiful fruits or hips could give origin to the Rosary. This, however, is a subject which cannot be pursued any further here, and we may be content if we bring together a fair selection of the plants which have been named in the foregoing articles, and make for ourselves bracelets, necklaces, chaplets and rosaries of the fruit seeds or wood of our own growing. *Hilderic Friend.*

GARDEN NOTES FROM SOUTH-WEST SCOTLAND.

I do not remember a season when trees and shrubs have flowered more lavishly in this district than they have done and are doing this year. Moreover, as we have had no frost since 5° on April 18, all Rhododendron species have made fine growth, which is all in favour of display next spring. Rhododendron oreodoxa and R. Fargesii are already thickly set with flower buds, the trusses with which they were loaded in March and April having been diligently removed so soon as they withered.

Although the so-called Scotch Laburnum—L. alpinum—is much finer when in blossom than the common L. vulgare, it is far less often to be seen in British grounds and gardens. When not in flower there is little to distinguish between them, the leaves of L. alpinum being of a darker green and less downy on the under surface than those of L. vulgare. The important difference between them consists in the flower racemes of L. alpinum being much longer and of a richer yellow than those of the other species. Moreover, they are produced a full fortnight later than those of L. vulgare, thereby prolonging what is one of the chief glories of late spring-time.

Among June-flowering shrubs, two species of Spiraea deserve favourable notice. They are of very different habit, the first being S. bracteata (*Bot. Mag.*, t. 7,429), forming a dome eight or nine feet high, the upper surface of its arching branches and branchlets being densely crowded with round rosettes of snowy blossom. Originally planted at the same time as the hybrid S. Van Houttei about ten feet distant, the bushes grew to conflict with each other, and we had to decide which should be removed. I had little or no hesitation in condemning S. Van Houttei. Experts recommend that this class of Spiraea should be thinned by careful pruning, but the knife has never been used upon a bush within sight of where I am sitting, and no treatment could secure more flowers. There is literally no room for more.

The other species referred to is S. decumbens, of humble stature, some nine inches high at most. When planted about twenty years ago on a retaining wall facing west, it showed little promise of the ample space it was to claim. It now forms a close curtain seven feet by four feet, of neat, bright green foliage, covered in June with rosettes of white flowers. Most of this genus are somewhat exacting in demand for a moist root run; but this plant, set four feet above the ground on a wall, finds no fault with its situation.

There are certain plants which take up a lot of room in a border that may be required for something else, and which display their flowers equally well in woodland as in the garden. Having suffered much affliction in past years from the evil appetite of rabbits, it may be useful if I note two herbs possessing some privy property distasteful to those animals. One is Funkia Sieboldiana, whereof the fine cordate foliage and long, flowering stalks, although alluringly succulent in appearance, are never molested beside our woodland paths. The other is Libertia ixioides or L. grandiflora (I am not sure which) from New Zealand, which throws up spikes of white blossom to a height of three or four feet and seeds itself freely around.

So vastly has the range of choice among hardy plants been increased of late years, that no amateur can grow more than a fraction of those that are really desirable. Many of us are grateful for information and advice afforded in *The Gardeners' Chronicle* towards making a selection. It seems to be regretted, therefore, that prominence should have been given to "*Kent's*" recommendation of the Virginian Poke-weed—Phytolacca decandra (page 442), whereof the dull white flowers scarcely entitle it to the ample space it claims in a border; whereas the Chinese counterpart of that species, P. clavigera (*Bot. Mag.*, t. 8,978) bears spikes of clear rose-coloured flowers, each with a bright green ovary in the centre, followed by shining black berries similar to those of the other species. Introduced by Forrest in 1913, this plant has proved perfectly hardy, is handsome when in bloom, and may be raised easily from the seeds which it produces in such abundance. *Herbert Maxwell, Monreith.*

NOTES FROM A WELSH GARDEN.

Few of the newer Primulas in general cultivation seem to have had such a varied reception as P. Florindae. On the one hand, its merits are unreservedly exalted, and on the other it is "damned by faint praise." Here, by the water and among native Ferns and other greenery at the margin of the woodland, it is a decided acquisition, moderate in stature, beautiful in flower and foliage and brimful of that abounding vigour and ease of culture which, after all, counts for so much with most of us. In colour, its yellow comes between the pallor of P. sikkimensis and the richer tone of P. helodoxa. Its splendid heartiness appears even to disarm the slugs which work havoc among many of its companions, while the fragrance of its swinging bells is delicious, perhaps even more delightful than that of P. sikkimensis. These mops of blossom are so large and continue to flower for so long a period that I was not surprised on roughly counting the buds and blooms on an average cluster to find that these numbered somewhere about two hundred.

Among other Primulas of a small collection which are still (mid-June) blooming, the violet and purple forms of P. microdonta are exceedingly lovely, especially in association with the pale sulphur-yellow of P. flexilipes and other of the dwarfer members of the sikkimensis group. P. Bulleyana still asserts itself as a handsome and vigorous species which is so valuable in maintaining a succession as those of the P. pulverulenta and P. japonica class cease flowering. The more uncommon species in bloom include P. suffrutescens, the "shrubby Primrose" of the central Rockies, whose procumbent branches are sparsely furnished with tufts of dull green, leathery, narrow leaves and loose heads of rose-pink, golden-eyed flowers.

Darlingtonia californica has been bearing aloft on one-foot stems its quaint blossoms for several weeks, this plant once again proving hardier than Sarracenia purpurea, which was destroyed entirely last winter. Here, in the bog, are the white flowers of Mimulus Lewisii alba, the rosy-pink and yellow of that admirable hybrid, M. Bartonianus, the brilliant little M. Whitecroft Scarlet, and a broad and bronzy mat of M. (Mazus) radicans, studded with a brave show of its milk-white and violet blooms. Saxifraga aeizoeides is always a reliable plant at the waterside, and both the golden-yellow type and the crimson-vermilion S. a. atrorubens give a long season of bloom. Among these and other bogland dwellers, S. Sibthorpii is freely naturalised. If this little annual, with its bright golden blossoms, is not a "choice" plant it has its uses, for it is often upon such incidentals as these that much of the interest and charm of one's garden depends. Parochetus communis is already flowering and making its way towards the water as its custom is, the first patch to show colour being a form with blooms of a deeper blue than those one usually sees, whilst the brown chevrons of its leaves are more distinctly marked.

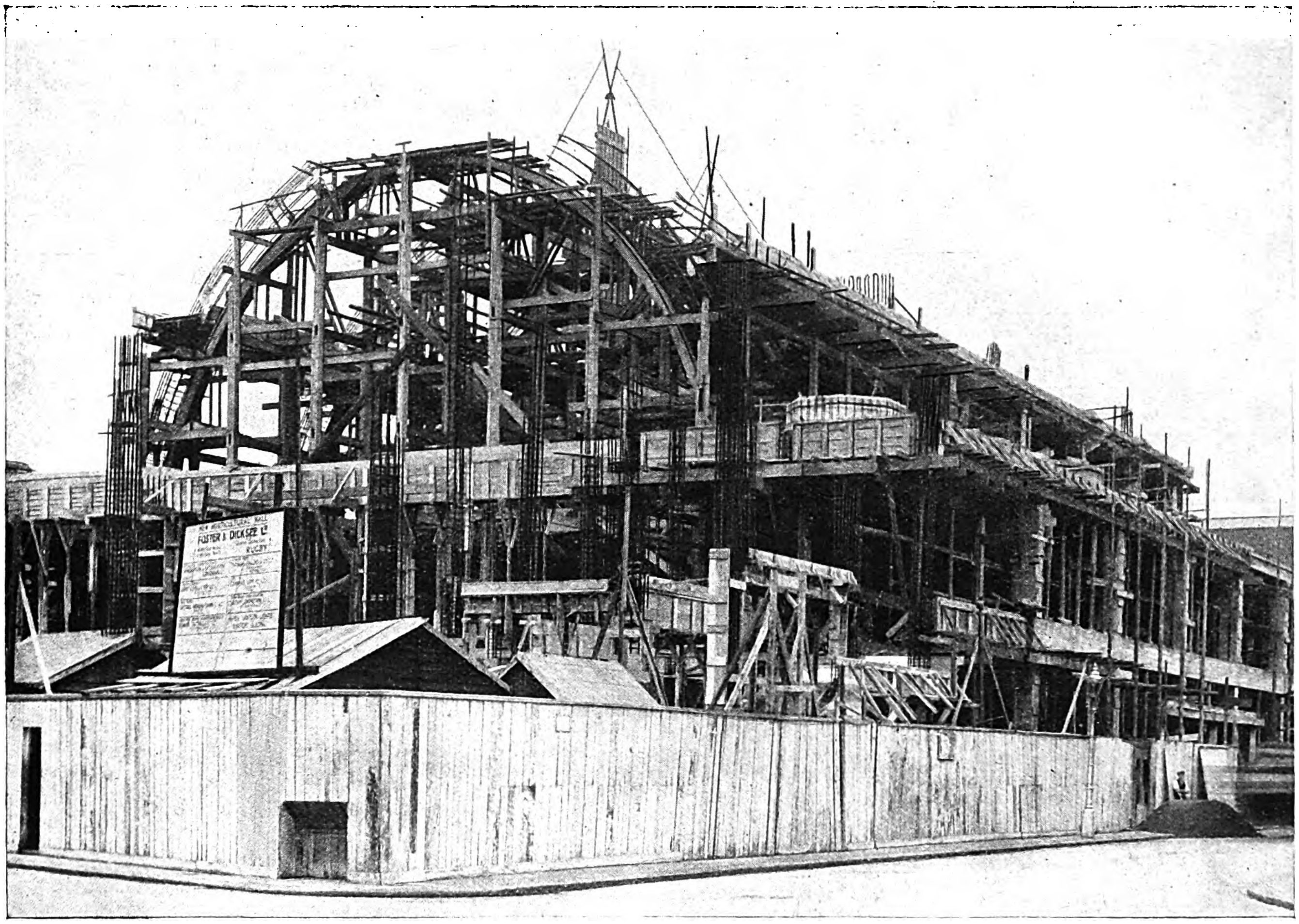

FIG. 226.—THE ROYAL HORTICULTURAL SOCIETY'S NEW HALL IN COURSE OF CONSTRUCTION.

One of the handsomest of the hardy Geraniums now flowering is G. refractum, a medium-sized plant of good habit bearing very large, saucer-shaped blossoms of a clear rose-pink, delicately-veined with a darker shade. G. sinense is, comparatively, a new-comer, with downy, vine-like leaves and a stature of about two feet. This species bears a great profusion of lavender blossoms, one inch across, over a long period, but it just misses being among the select of the genus by its habit of keeping its flowers face downwards. Old plants of G. anemonefolium, it is good to relate, just managed to pass through last winter, and now that these are in full flower, this magnificent Madeiran species may easily claim first place among the taller of the outdoor Cranesbills. Another good, but reputedly tender border plant which has survived is Salvia verbascifolia, which puts up above its large, heavily-felted leaves eighteen-inch spikes of snow-white flowers. These are lightly pencilled with violet on the tip, very hairy and about the size of Foxglove bells.

Aster Farreri among the rock plants never fails to strike a note of distinction with its shaggy purple and orange heads, and A. Pattesoni is still one of the most charming of the dwarf, June-flowering American species. Veronica Teucrium dubia var. Shirley Blue is, perhaps, the most remarkable of the numerous varieties of a valuable old Speedwell. The almost upright, dark-stemmed spikes and the large size of the deep blue flowers and foliage of this very attractive Veronica suggest that it might be of hybrid origin. Another Veronica which, if not so showy, is interesting and uncommon, is V. pyrolaeformis, a Chinese species introduced, I think, by Farrer. From a low tuffet of rather large, downy leaves, rise eight-inch spikes of blossom in a soft lavender-blue. This plant has proved quite hardy and reliable for several seasons. In V. tridentata one again has a species of more than usual merit which is not often seen. It makes a broad, dense mat of a lively green which throughout June and part of July is almost hidden beneath a multitude of upright flower shoots, almost three inches in height and of a gentle shade of lavender. In a real Speedwell blue, rich and deep, V. Nummularia, a Pyrenean species, will also not escape notice in the rock garden, whilst among the taller shrubs (three feet) of this genus one of the first to flower is V. Balfouriana, a very attractive hybrid of good habit and with large, blue-purple flowers. Blooming with unusual freedom this season, its pale, china-blue clusters having a telling background in the deep glossy-green foliage, is V. edinensis.

Quite a novel effect is created by a little colony of Helianthemums of the new Tighnagarh strain, these dwarf and compact little plants giving an abundance of blooms in unusually rich and uncommon shades of orange, crimson terra-cotta, scarlet and other warm colours. One of these is, in fact, almost the same red as that known as huntsman's scarlet. Cistus pilosepalus, one of the earliest to flower, has been sheeted with its large, white blooms since the middle of May. It makes a neat, well-rounded little bush of rather under the average stature, but the flowers are comparatively large. The beautiful C. ladaniferus immaculatus was almost entirely destroyed here last winter, yet the type plant escaped with scarcely any injury. This, together with other marked differences in character, would seem to lend weight to the suggestion that this very distinctive Cistus might claim specific rank.

Olearia semidentata, which successfully escaped the frosts, much to one's surprise, is carrying a fine crop of its charming lavender, purple-eyed flowers. If this is the choicest of its genus in general cultivation, Genista virgata may surely claim an equal distinction among the taller Brooms of the season. Several large bushes of this Madeiran species grouped together make a most delightful effect, the myriads of little yellow flowers, blending with the glistening, silvered-green of the billowy foliage, being an irresistibly charming combination. This Genista, moreover, is quite hardy, it may be raised from seeds, and it does not seem to need replacing so often as do most Brooms. As a rock garden shrub, G. spathulata is useful as well as attractive, for it blooms after most of the better-known dwarfs are over and makes a fine mass of deep yellow.

On the Heath slopes there are no more comely little shrubs among the lesser kinds than Erica cinerea coccinea and Bruckenthalia spiculifolia. The former, which is the earliest of its species to bloom, is always distinguished readily by its very dark green foliage, diminutive size and vivid blood-crimson flowers. The other, a useful companion plant, covers its fresh green, Heath-like foliage with blunt spikes of blossom in an exquisitely soft rosy-pink. Although most of the Burnet Roses which associate so pleasantly with Heaths on dry, sunny banks are over, a few are still full of colour. One of these is a lovely old variety called, I think, Mrs. Colville, the little single flowers being a deep, vivid crimson. A seed-raised American species, Rosa acae, with large, rose-pink flowers and, apparently, a dwarf habit, promises favourably, and along with these is that winsome little Italian, R. sicula, a dainty thing with little, cup-shaped blooms in the cheeriest of pink and lots of them. *A. T. Johnson, Ro Wen, Conway, North Wales.*

GARDENERS AS "MALE SERVANTS."

The question of whether a certain man employed in the garden will come within the definition of a male servant for the purposes of the Inland Revenue Act, 1869, the Customs and Inland Revenue Act, 1876, and the Finance Act of 1908, and as such must have a licence, is one which seems to worry many employers, and, indeed, one which seems to be none too clearly interpreted by the Courts themselves.

Under the provisions of the Inland Revenue Act of 1869, the term "male servant" means and includes:—"Any male servant employed either wholly or partially in any of the following capacities, that is to say, maitre d'hotel, house steward, master of the house, groom of the chambers, valet de chambre, butler, under-butler, clerk of the kitchen, confectioner, cook-house porter, footman, page, waiter, coachman, groom, postilion, stable boy, or helper in the stables, *gardener, under-gardener,* park keeper, gamekeeper, under-gamekeeper, huntsman, whipper-in, or in any capacity involving the duties of any of the above descriptions of servants, by whatever style the person acting in such capacity may be called." By the Motor Car Act of 1903 it also includes a chauffeur.

To this definition there are some exceptions, and for employees falling within them employers will be exempt from the obligation of obtaining a licence. The first exception is that where the employee is employed for the purpose of trade, as, for example, a gardener employed by a market gardener or a nurseryman.

The second exemption arises under the provisions of the Customs and Inland Revenue Act of 1876, section five, which enacted that the term male servant as defined by the earlier Act, is not to include a person who, being *bona fide* employed in a capacity for which no licence is required, is occasionally or partially employed in a capacity which does ordinarily require a licence. And thirdly, it is not to include a person who has been *bona fide* engaged to serve his employer for a portion only of each day and who does not reside in his employer's house.

Such are the main statutory provisions on the subject, and we may now turn our attention to some of the cases which have been before the Courts to be decided judicially.

On the subject of the exception of persons who are employed for the purpose of trade, there is the case of Dillon v. Marquis of Bath. In this case a labourer was employed at work in a garden to dig and do rough work, including the planting of Potatos and Cabbages, under the supervision and direction of a gardener, his wages being equal to those paid to an ordinary labourer (agricultural) in the district where he worked. It was held by the Court that he did not come within the definition of a gardener or under-gardener as defined by the Acts in question.

To take another case—this time on the statutory exception of persons ordinarily employed on work not within the Act, but occasionally doing work which is within the Act, and persons employed on work within the Act, but only on part time employment.

It was held in the case of Helsby v. Wintle that where a man does work which would require a licence to be taken out, the employer will not be liable if the employee is only occupied on this work for a short time, and it is subsidiary to his proper work.

In another case heard in 1911, on "jobbing" gardeners, there is an interesting passage in the judgment which is well worth reproducing: "the question is whether this jobbing gardener was a male servant of the respondent. The description given of him is sufficient to show that he was not. A jobbing gardener is a tradesman not a servant. The fact that it was part of the contract between the gardener and the respondent, that if the gardener could not come himself on any date he was to send a qualified substitute, is in itself conclusive. A servant contracts to render *personal* service."

In this case the gardener worked four days of the week for one man and the remainder of the week for someone else. He could come when he liked and if necessary could send another man to do the work for him. He was, in fact, what is generally known as a jobbing gardener, and it was held that there was no obligation on the part of the employer to take out any licence in respect of this man.

With regard to the provision of the Revenue Act of 1876, that if the servant is partially employed only, no duty seems to be payable if he is only employed for one or two days a week.

Lastly, the amount of duty payable is fifteen shillings for every male servant employed within the meaning of the Acts; the licence takes effect from January 1, or whatever later date it is taken out, and expires on December 31 in each year. The maximum penalty for keeping a male servant for whom no licence has been obtained is £20. *H. A. S.*

FRUIT REGISTER.

APPLE MELROSE.

This old Apple is stated to be of Scottish origin and was probably introduced by the Monks of Melrose Abbey. It was at one time regarded as the most popular Apple of the Tweedside orchards, but it is now seen but rarely.

The late Dr. Hogg recorded that in the forties he had known specimen fruits of it sold at two shillings per dozen—a high price for Apples in those days.

The fruit is large, rounded-ovate, inclining to conical and broad at the base, while it is irregular in outline, this irregularity being caused by prominent ribs which extend from the middle of the fruit to the basin of the eye, where they form large and unequal ridges. The sides are often flattened, as though indented by a blow.

The skin is smooth and shining, pale yellow, tinged with orange and marked with spots and blotches on the portion exposed to the sun. The eye is large and closed by broad, flat segments, while the stalk is about a quarter-of-an-inch in length, inserted in a deep and irregular cavity which is streaked and marked with patches of rough russet. The flesh is firm and yellowish-white in colour, while the flavour is sweet and pleasantly sub-acid.

This variety is an useful and attractive sort, suitable either for dessert or culinary purposes from November until the end of January, and the tree is usually healthy and vigorous in growth, forming a large rounded head, and very productive.

APPLE GLORY OF THE WEST.

The late Mr. John Watkins, of Apple culture fame, usually exhibited a dish of this variety in any collection that he staged.

It is a very large cooking Apple, remaining sound and in good condition until the beginning of the new year. The fruits are large and oblate in shape, ridged and angular about the eye, and ribbed on the sides, while the skin is smooth and shining, yellow, tinged with green, the portion exposed to the sun being flushed with pale clear red; the whole surface is spotted with russety dots and several larger spots. The eye is large, with long segments, set in an angular basin, and the stalk is about three-quarters-of-an-inch long, in a deep cavity and surrounded by a patch of rough grey russet. The flesh is yellowish-white, firm but tender, very juicy, and with a brisk and aromatic flavour.

Apple Glory of the West is a free and healthy grower, and is usually very productive. *Pomona.*

HOME CORRESPONDENCE.

Apple Upton Pine.—Being the raiser of the Apple Upton Pine (named after the village of that name near Exeter), I entirely disagree with the statement on p. 425 of *The Gardeners' Chronicle*, that the variety is a biennial bearer. As grown here, it is the most certain and regular bearer of one hundred and forty varieties, and I could bring irrefutable evidence to prove that it has never once failed to carry a fair to heavy crop of Apples on all trees from two years old and upwards. I have never known a year when they did not require more or less severe thinning. Messrs. J. R. Pearson and Sons, of Lowdham, describe it in their catalogue as a "regular cropper," and it has received special commendation from various writers for its regular bearing qualities. *George Pyne, Topsham, Devon.*

"Breaking" in Tulips.—The following early reference to this phenomenon, taken from Parkinson's *Paradisus*, is appropriate in connection with Mr. D. M. Caley's preliminary note, published at p. 435 of *The Gardeners' Chronicle*, on June 16. Like Mr. Caley, Parkinson was clearly of the opinion that "breaking" was the expression of a pathological state. The quotation occurs at p. 62 of the edition of 1656. After discussing the variability of Tulips in other respects, he comes to the subject of colour. "When they have been of one entire colour for divers years, yet in some years they have altered very much, as if it had not been the same, viz., from a purple or stamel, it hath been variably either parted, or mixed, or striped with white, either in part, or through the whole flower, and so in a red or yellow flower, that it hath had either red or yellow edges, or yellow or red spots, lines, veins, or flames, running through the red or yellow colour, and sometimes it hath hapned, that three leaves have been equally parted in the middle with red and yellow, the other three abiding of one colour, and in some the red had some yellow in it, and the yellow some red spots in it also; whereof I have observed, that all such flowers, not having their original in that manner (for some that have such or the like marks from the beginning, that is, from the first and second years flowering, are constant, and do not change), but, as I said, were of one colour at the first, do shew the weaknesse and decay of the rooot, and that this extraordinary beauty in the flowers is but as the brightness of a light, upon the very extinguishing thereof, and doth plainly declare that it can do his Master no more service, and therefore with this jollity doth bid him good night." That Tulips could change the colours of their flowers from year to year, as from white to red or yellow, or the like, an opinion confidently maintained in those days, Parkinson will have nothing. The only colour changes in his experience were those now called "breaking." "Let not therefore any judicious be carried away with any such idle conceit, but rather suspect some deceit in their Gardeners or others, by taking up one, and putting in another in the place, or else their own mistaking." *F. W. Oliver.*

Osmanthus Delavayi.—I was considerably surprised when I read in your paper that a specimen of Osmanthus Delavayi, at Westonbirt, two-and-a-half feet high, was considered remarkable by one of your correspondents. My plant here, while it cannot as yet emulate the Cambridge one mentioned in your issue of the 16th as being eight feet in height, is five feet exactly, and, if it keeps on growing at its present rate, and I see no reason why it should not do so in this soft western climate, the Cambridge Botanic Gardens may in the course of a few years have a rival in Argyll. *George R. Campbell, Capt., Minard, Argyll.*

SOCIETIES.

MANCHESTER AND NORTH OF ENGLAND ORCHID.

At the recent meeting of the above Society, the members of Committee present were Messrs. J. B. Adamson (in the chair), A. Burns, A. Coningsby, J. Evans, A. Keeling, G. V. Llewelyn, D. Losh Thorpe, D. McLeod, W. J. Morgan, and H. Arthur (Secretary). Messrs. E. Tack and J. Thrower were invited to sit with the Committee.

First Class Certificates.

Miltonia William Pitt var. Emperor.—A lovely variety with sepals and petals of a port wine shade; lip butterfly marked, base deep brown, shaded rose and white on the margin. Shown by Captain W. Horridge.

Odontoglossum Breworthii var. Ethel Thorpe.—A spike was shown carrying fourteen flowers; three inches across, reddish chocolate, with a large, flat lip. From D. Losh Thorpe, Esq.

Awards of Merit.

Odontoglossum eximium regalis, from J. B. Adamson, Esq.

Brasso-Cattleya Apollo, Llewellyn's var., from G. V. Llewelyn, Esq.

Awards of Appreciation.

Odontioda southportense and *Miltonia Leonard Hatcher*. Shown by G. V. Llewelyn, Esq.; and to *Odontioda Henryi splendens*, from J. B. Adamson, Esq.

Cultural Certificates.

To Mr. J. Howes, for Phaius Norman, and Masdevallia Houtteana; and to Mr. George Gardner, for Odontioda Breworthii var. Ethel Thorpe.

Groups.

J. B. Adamson, Esq., Blackpool (gr. Mr. J. Howes), staged a group to which a Large Silver-Gilt Medal was awarded. It included Odontiodas in variety and several Odontoglossums; also Masdevallia ignea, M. Houtteana and M. Bocking Hybrid; Dendrobium infundibulum, Cattleya Douai, Miltonia Bleuana grandiflora, and many other choice Orchids.

G. V. Llewelyn, Esq., Southport, staged Brasso-Cattleya Apollo, Llewelyn's var.; Odontioda southportense, Miltonia Leonard Hatcher, and several seedlings.

Captain W. Horridge showed Miltonia William Pitt var. Emperor and M. Bleuana Reine Elizabeth, together with Odontioda Collinge; while D. Losh Thorpe, Esq., staged Odontioda Breworthii var. Ethel Thorpe.

Messrs. Keeling and Sons exhibited various Odontoglossums, Odontioda Canopus, Miltonia Lyoth and M. vexillaria purpurea; and Dendrobium superbum; and Mr. John Evans staged Cypripedium Gowerianium Gratrixianum, and Odontoglossum eximium.

At the meeting held at the end of May, the members of Committee present were Messrs. J. B. Adamson (in the chair), A. Burns, B. Collins, A. Coningsby, J. Evans, A. Keeling G. V. Llewelyn, D. McLeod and H. Arthur (Secretary).

Awards of Merit.

Miltonia Constance var. Argenta; M. Freya var. Concordia; M. Vine House var. Rosea; Odontoglossum Rosina var. Vesteyanum, and *Laelio-Cattleya Aphrodite var. Arandora.*—All from the Hon. G. E. Vestey.

Odontioda Maureen Bolholt var.; Odontioda Maureen var. Cardinal; and *Miltonia Lena (Lyoth × Charlesworthii).*—Shown by Captain W. Horridge.

Miltonia vexillaria var. Duke of York, and *M. Hyeana var. King Ethelred.*—From Mrs. Bruce and Miss Wrigley; and *Miltonia Princess Mary var. radiata*, from Messrs. A. J. Keeling and Sons.

Award of Appreciation.

To *Brasso-Cattleya Springhill var. Stabilitas*, from the Hon. G. E. Vestey.

Cultural Certificate.

To Messrs. A. J. Keeling and Sons, for Miltonia Lyoth var. magnifica.

Groups.

Mrs. Bruce and Miss Wrigley, Bury (gr. Mr. A. Burns), staged a group that was awarded a Silver-Gilt Medal, and which included Miltonias of the vexillaria type, including Duke of York, Oswaldii, Goliath, Duchess of York, Earl of Strathmore, Cobbiana, and Crimson King; together with several others.

J. B. Adamson, Esq., was also awarded a Silver-Gilt Medal for a group of choice Odontoglossums, including O. Monarch, O. Gorizia, O. eximium Ruby, O. Grand Duke Nicholas, and O. crispum Baron Renfrew; also Odontioda Charlesworthii, Walton Grange var., and others.

The Hon. G. E. Vestey staged a group to which a Silver-Gilt Medal was awarded; and G. V. Llewelyn, Esq., received a similar award for a collection of Cypripediums, several Miltonias and Odontoglossums in variety; while Captain W. Horridge staged Odontioda Maureen, Bolholt var., and Miltonia Lena.

DERBYSHIRE HORTICULTURAL.

By invitation of Mrs. Walter Evans, Vice-President of the above Association, over eighty members and their friends visited Darley Abbey recently and inspected the gardens and glasshouses.

Many new varieties in Rhododendrons and Azaleas were noted, and the wide range of alpines in the rock garden created keen attention and interest amongst the gardeners present. Newly planted beds and borders around the house spoke of summer glories to come.

In the glasshouses, Vines, Peaches, Nectarines Figs, Melons, Carnations, Hydrangeas, Tomatos and Cucumbers were growing under ideal conditions, while there were also pot specimens of Apples, Pears and Plums.

This was the first of the proposed six summer visits, and Mr. J. Maxfield, the gardener, ably replied to the many enquiries put to him. An old Mulberry tree, from the trunk of which grew a parasite Gooseberry bush, bearing fruits, created interest, while admiration for the well-kept lawns and beautiful natural setting amid stately Elms, was expressed by all.

THREE COUNTIES AGRICULTURAL SHOW.

No big agricultural show would be complete in these days without its flower tent and the above Society is to be congratulated on the success of its efforts at Hereford, on June 5, 6 and 7. The show was made up of trade exhibits displayed in a large cross-shaped marquee, and while the latter was well filled there was ample room for the many visitors to see everything with comfort. In fact, the flower tent was one of the chief features of a well organised show.

One of the outstanding features of the show was a magnificent collection of Sweet Peas exhibited by Messrs. Dobbie and Co. The flowers were very tastefully displayed and attracted much attention, particularly the varieties Pinkie, Mermaid, Prince of Orange, Gold Crest, Olympia and Flamingo. This exhibit fully deserved the Gold Medal awarded to it.

Messrs. Blackmore and Langdon set up an attractive exhibit which consisted of spikes of Delphiniums in variety at the back, with Lupins, Pyrethrums, Irises, and cut blooms of many of the firm's well-known Begonias in front. The latter were all named and the flowers remarkable in size and variety of colours.

Carnations in variety were artistically arranged by Messrs. Allwood Brothers, and the flowers were of exceptional size and substance. White Pearl attracted much attention, and other varieties which were admired were Harmony, Mary Allwood, Topsy, Laddie, Mrs. C. F. Raphael and Red Laddie.

The King's Acre Nursery Co. filled a large space with a collection of Hydrangeas which made a striking display. All the shades of colour represented in this family of plants seemed to be represented. The same firm also set up a fine lot of Dahlias and an interesting group of Rhododendrons and Azaleas, amongst which the popular Pink Pearl was the most conspicuous variety. Messrs. Reamsbottom and Co. sent a choice collection of Anemones, and Mr. F. Rich, Worcester, set up a group of hardy flowers in which Pansies and Violas were very attractive.

Messrs. Kelway and Son staged a fine exhibit composed of single and double Paeonies, Delphiniums, Pyrethrums, Lupins and Kniphofias, the whole making a very effective display. A little rock garden on a table was shown by Messrs. J. C. Wheeler and Son, Gloucester, and the same exhibitors also sent a collection of dwarf Conifers, and a number of Box trees cut into fantastic shapes.

Messrs. W. Hopwood and Son, Cheltenham, filled one end of the tent with an interesting collection of greenhouse and hardy flowers. Amongst the latter, which were tastefully set up, were Irises, Poppies in variety, Lupins and Aquilegias.

Messrs. J. Wilson, Ltd., Hereford, had some baskets of very choice Irises in their exhibit, and close at hand was a fine display of Delphiniums from Messrs. Hewitts, Solihull.

Nothing in the show attracted more attention than the collection of hardy flowers shown by Mr. W. H. Walters, Colesborne, largely on account of the rareness of many of the kinds displayed. There were choice hardy Primulas, Eremuri, Alliums, Saxifragas and many other charming things. A collection of Roses in pots was tastefully arranged by the Madresfield Gardens, Ltd., and amongst the varieties were Golden Salmon, which attracted much attention; Locarno and Mrs. W. Cutbush, a pretty shade of pink.

A splendid group of plants consisting of Caladiums, Hydrangeas, Gloxinias, Streptocarpus and Rocheas, intermixed with Codiaeums and Palms, was arranged by Messrs. J. Peed and Son, and deservedly won a Gold Medal. Messrs. Rich and Cooling, Bath, sent a collection of hardy flowers in which Poppies predominated; and from Messrs. Bakers, Wolverhampton, came a charming exhibit of Pyrethrums, Lupins, Irises, Delphiniums and numerous Primulas. Sweet Peas in great variety were shown by Mr. J. Stevenson, Wimborne; Messrs. Wilson and Agar, Reading, were represented by Delphiniums and Lupins, and Messrs. J. H. White and Co., Worcester, set up an attractive collection of hardy flowers and Roses. An extremely pretty and daintily furnished rock garden was shown by Messrs. Maxwell and Beale, Broadstone, in which many choice alpines were displayed; and Messrs. Bowell and Skarratt, Cheltenham, also showed an interesting collection of alpine plants.

A fine collection of Irises was exhibited by Messrs. Toogood and Sons, and, in addition to showing some choice Orchids, Messrs. J. Cypher and Sons, Cheltenham, displayed a pleasing group of greenhouse plants. Lupins were the most conspicuous flowers shown in Messrs. Jarman and Co.'s collection, and a table of Ferns from Messrs. Ellisons, West Bromwich, looked cool and refreshing.

UNITED HORTICULTURAL BENEFIT AND PROVIDENT.

Mr. T. R. Butler presided at the monthly meeting of this Society, held in the R.H.S. Hall, on Monday June 11. Seven new members were elected. One member, over seventy years of age, withdrew the sum of £10 from his deposit account, and the sum of £111 0s. 8d. was passed for payment to the nominees of two deceased members.

The sick pay for the month on the Ordinary side amounted to £98 17s. 1d., and on the State Section to £77 15s. 8d.; maternity claims came to £5.

The Secretary reported that the Trustees had invested £1,500 in Walsall four-and-three-quarter per cent. stock. The total sum of £69 1s. 6d. was granted from the State Section to thirteen members for dental and surgical treatment, and several other cases were considered.

ROYAL HORTICULTURAL.

June 26.—The Orchid Committee and both sections of the Floral Committee met on the occasion of the fourth Amateurs' Show at Vincent Square on the above date The Orchid Committee recommended one Award of Merit and the Floral Committee recommended three Awards of Merit to novelties.

Orchid Committee.

Present: Sir Jeremiah Colman, Bt. (in the chair), Mr. Gurney Wilson (Hon. Secretary), Mr. Lionel de Rothschild, Colonel Stephenson Clarke, Mr. Fred J. Hanbury, Mr. R. G. Thwaites, Mr. J. Cowan, Mr. Fred K. Sander, Mr. E. R. Ashton, Mr. J. E. Shill, Mr. H. G. Alexander, Mr. Charles H. Curtis, Mr. A. A. McBean, Mr. A. Dye, Mr. W. H. Hatcher, Mr. T. Armstrong and Sir John Rutherford.

Award of Merit.

Laelio-Cattleya Miss Faith Hanbury (*L. cinnabarina* × *L.-C. Canhamiana alba.*)—A fine plant that carried two spikes and a total of nine large flowers. The sepals are yellowish and the petals buff, shaded with pink; the lip is bright purple with a paler edge and purple lines in the golden throat. Shown by **Fred J. Hanbury**, Esq. (gr. Mr. Farnes), Brockhurst, East Grinstead.

Dendrobium thyrsiflorum var. Gallicianum.—This is now regarded as the correct name of the Dendrobium which gained a First Class Certificate as Dendrobium sp. (see p. 457). It is figured in *Lindenia*, t. 241.

Groups.

A very pretty group was arranged by Sir **Jeremiah Colman**, Bt. (gr. Mr. J. Collier), Gatton Park, Reigate. In the centre were fine plants of Laelio-Cattleya Martinetii with eight handsome flowers, Dendrobium Gatton Sunray and Miltonia Princess Alice. Other good things were M. Charlesworthii, Nanodes Medusae, Cypripedium Lawrenceanum Hyeanum, Zygopetalum Roeblingianum—a part of the plant presented to the R.H.S. twenty-five years ago as a contribution towards the erection of the present hall; Cypripedium Godefroyae leucochilum, Polystachya paniculata, and the beautiful Laelio-Cattleya Isobel Colman, with seven white and purple flowers.

Mr. **Fred J. Hanbury** was awarded a bronze Lindley Medal for his fine specimen of Dendrobium Victoria-Reginae. **Robert Paterson**, Esq. (gr. Mr. Merry), Stonehurst, Ardingley, was awarded a Cultural Commendation for a big specimen of Laelio-Cattleya Canhamiana alba superba, which had six spikes and a total of twenty-two beautiful flowers.

Several other plants were exhibited, including Brassia Lawrenceana longissima, from G. **Eyre**, Esq. (gr. Mr. W. Lahmer), 22, Bedford Gardens; and Odontoglossum Omega, The Node var., from Mrs. **Carl Holmes**. A tall spike of Lissochilus Horsfallii was shown by Mr. W. J. **Van de Weyer**, Cliffe House, Dorchester; it carried over thirty flowers.

Floral Committee.

Present: Section A.—Mr. Henry B. May (in the chair), Mrs. Helen Lindsay Smith, Mrs. Ethel M. Wightman, Mr. Arthur Turner, Mr. H. J. Jones, Mr. R. Findlay, Mr. James B. Riding, Major George Churcher, Mr. William Howe, Mr. A. E. Vasey, Mr. D. B. Crane, Mr. W. B. Gingell, Mr. G. W. Leak, Mr. J. M. Bridgeford, Mr. Donald Allan, Mr. E. R. Janes, Mr. M. C. Allwood and Mr. W. D. Cartwright (Secretary).

Section B.—Mr. Gerald W. E. Loder (in the chair), Mr. A. Bedford, Mr. T. Hay, Mr. Eric M. Marsden-Jones, Mr. F. G. Preston, Mr. G. Yeld, Mr. R. C. Notcutt, Mr. Hiatt C. Baker, Mr. Reginald Cory, Mr. Mark Fenwick, Mr. Clarence Elliott, Sir William Lawrence, Bt., Mr. J. Comber, Mr. Amos Perry, Mr. E. H. Wilding, Mr. W. G. Baker and Mr. N. K. Gould (Secretary).

Awards of Merit.

Carnation Margot Holmes.—A large, well-formed flower of strong and pleasant fragrance. The colour is a light mauve-pink. Shown by Mrs. **Carl Holmes** (gr. Mr. W. J. Penton), The Node, Welwyn, Herts.

Choananthus sp.—This is a Lily-like plant from Uganda. The robust leaves are very similar to those of a Haemanthus, while the flowers are suggestive of a Cyrtanthus. The pendulous, tubular flowers which are borne on short stems, are green, broadly margined with pale scarlet. Shown by **Dame Alice Godman** (gr. Mr. Savegar), South Lodge, Horsley, Sussex.

Ursinia anethoides.—This is a very showy hardy annual. The small, pinnate leaves are very narrow and of stout texture. The ray florets are of bright, deep yellow colour, and there is a definite dark crimson zone. Shown by Mr. T. **Hay**, Hyde Park, London.

The Amateurs' Show.

The annual shows, for competition solely amongst amateurs, which were inaugurated four years ago, steadily increase in success, and the show under notice, which was held in the Horticultural Hall, Westminster, on June 26, was decidedly the best of the series, though a few amateurs still display a tendency to bring plants which are not worthy of a place in a small country show. But generally the quality of the exhibits was distinctly high, and the hall was well filled with a pleasant variety of plants and flowers. The schedule was divided into three divisions. Division A was open to all amateurs, while Division B was for only those amateurs who do not regularly employ more than one gardener and a boy; Division C was for those who grow their plants and flowers unaided, except for occasional assistance in the heavier work, such as digging and trenching. The Silver Cups, offered for the most successful exhibits in each division were won by Sir W. Lawrence, Bt., Mr. F. J. Cashnella, and Mr. G. H. Fisher and Mrs. Wightman, who gained equal points in division B, and the National Sweet Pea Society's Silver-gilt Medal, offered for the best Sweet Peas in Division A, was won by Major **Krabbe**, Calcot Grange, Reading.

[Our remarks on the various classes will appear in our next issue.—Eds.]

ROYAL CORNWALL SHOW.

One of the most attractive features of the Royal Cornwall Show, held recently, at Bodmin, was the horticultural tent. Although the exhibits were not so numerous as at the Centenary Exhibition held at Truro last year, this section of the show was much above the average, and contained several outstanding features.

The Gold Medalists were Messrs. **Kelway**, Langport; **The Devon Rosery**, Torquay; Messrs. **Cook**, Hayle; and the **Michaelstowe Valley Nurseries**, St. Judy. The wonderful display of Paeonies and Delphiniums put up by Messrs. **Kelway** surpassed anything previously shown in the west of this nature. Good Paeonies noted included Lady Alexander Duff, White Lady, Dorothy Kelway, Queen Victoria, and General Wolfe; whilst the most striking Delphiniums were James William Kelway and Lord Holland.

Messrs. **Cook**, Hayle, a local firm, deserved their award for a wonderful display of Sweet Peas and Irises, the most attractive Sweet Peas being Magnet, Pinkie, Glorious, Youth and Miss California; while the **Devon Rosery** had a very attractive exhibit of Roses, Spiraeas, Crassula coccinea, Hydrangeas, Statice profusa, etc. The remaining Gold Medal was awarded to a very fine commercial exhibit of packed Tomatos, staged by the **Michaelstowe Valley Nurseries**, St. Tudy. The fruits were well graded and well packed.

A very tastefully arranged exhibit of herbaceous flowers staged by Messrs. **Jarman**, of Chard, received a Silver Medal; other Silver Medals were awarded to a general nursery display by Messrs. **Treseder**, Truro, and a unique collection of uncommon and choice plants put up by the **Primley Botanic Nursery**, Paignton.

A fine floral display by Mr. H. E. **Pennett**, St. Austell, included a unique advertisement in flowers for the Florists' Telegraph Delivery Association, in the form of a floral map of England linked up with the countries served by the Association; while Messrs. **Chalice**, of Plympton, had a good display of general nursery plants. Other firms which were represented by exhibits were Messrs. **Toogood**, Messrs. **Veitch**, Exeter, and Messrs. S. **Hammett**. Non-competitive exhibits were staged by the **Glynn and Lanhydrock Estates**, and H. **Hodge**, Esq., St. Austell, who arranged a fine group of Rhododendrons.

In the competitive classes, one of the finest floral efforts came from Mr. J. **Harris**, Hayle, with a fine display of Sweet Peas; while in the classes for vegetables and fruits there was very keen competition, especially in the Potato and Gooseberry sections. A feature of this section was the class for school garden produce, some twelve schools putting up exceptional displays, in many cases equal to or better than those shown in the open section. Entries in the pot plant section were more numerous than usual.

ANSWERS TO CORRESPONDENTS.

Sulphate of Iron and Black Spot on Grass.—*G. L. S.* Sulphate of iron, when mixed with sulphate of ammonia, should be used sparingly, and the mixing should be very thoroughly done, about half-a-pound for each thousand square feet dressed with sulphate of iron should be sufficient. It is better to apply a smaller quantity and repeat it if necessary, than to give a larger one. The paler colour of the grass is a seasonal change. The weather has been extremely cold in Wales, as elsewhere, and most grass is rather more yellow in colour than usual. With the rising temperature you should find that the grass will resume the dark green colour, which always follows a dressing with sulphate of ammonia.

Water Weeds in Swimming Tank.—*W. E. E.* Where goldfish, Water Lilies and other aquatics are grown in lakes, ponds and tanks, one pound of copper sulphate may be used with safety to 100,000 gallons of water, or one ounce to 6,250 gallons. The quantity of water in any given tank may be determined by multiplying the length, breadth and depth, which will give the number of cubic feet. Each cubic foot of water contains six-and-a-quarter gallons of water, so that if the number of cubic feet is multiplied by six-and-a-quarter the result will give the number of gallons of water in the tank. The copper sulphate will only kill the Algae, which consists largely of species of Vaucheria. It will not kill Duck Weed (Lemna) amongst which the larvae of mosquitos live and feed, so this should be skimmed off at intervals with a scoop consisting of some thin fabric fastened on a circular piece of wire, fixed to a rod or strong Bamboo cane. Water cleans itself in time, and the copper sulphate treatment has to be repeated. It is put in a bag of thin material and trailed through the water at intervals from side to side of the water till all is dissolved. It would be dangerous to use copper sulphate in tanks where the water is used for drinking and other domestic purposes, because poisons are considered to be cumulative in the human body, and although the above solution is weak, the poison would continue to increase by frequent use. (2) Mosquitos may be prevented from breeding in pools and tanks of any size by spraying the water with equal parts of crude oil and paraffin, which float on the surface and exclude air. This, of course, would be equally fatal to water plants and goldfish. The latter would feed on the larvae of mosquitos to some extent. Two small fishes, very common in Egypt and known as Bolti and Mullet, are very active in destroying the larvae, and it might be possible to obtain some of these fishes. Water butts and small tanks should be covered with close-fitting lids to keep out mosquitos. The most practical scheme with ponds is to remove all Duck Weed, Potamogeton and Algae from time to time, just as one has to weed a garden.

Communications Received.—J. McL.—J. H. M.—W. V.—W. H. D.—W. G.—J. M.—J. A. J.—W. E. G.—H. F. B.—W. E.—A. T. J.—S. A.—E. B.—R. C. N. W.

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